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ADDRESSES AND ORIGINAL ARTICLES

THE PRIMARY HISTOLOGICAL LESION OF REGIONAL ILEITIS

BY GEOFFREY HADFIELD, M.D. Lond., F.R.C.P.

PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LONDON; PATHOLOGIST TO ST. BARTHOLOMEW'S HOSPITAL

THE object of this paper is to summarise the histological changes found in the terminal ileum and its related lymph-nodes in 20 cases of regional ileitis. It has been possible to classify this material according to the evolution of the pathological process in the bowel, and it is claimed, on this basis, that the primary histological lesion can be defined. The average age of onset, duration, and symptoms in this series were substantially the same as those described by other observers. The average length of ileum affected was 19 cm., with extreme variations of 4 cm. and 60 cm. The terminal ileum and ileocæcal region were affected in 17 cases and the distal ileum in 3. Fistulæ from the bowel lumen to the abdominal wall or the bladder were present in 7 cases. In no case did the condition affect the jejunum or the colon apart from the small bowel.

SUBMUCOUS THICKENING

Thickening of the wall of the ileum was a striking and constant naked-eye change. It could be clearly correlated with an equally striking and constant increase in thickness of the submucous coat, sharply limited to the stenosed part of the intestine and easily visible to the naked eye. Hypertrophy of the muscular coat was inconstant and variable in degree and tended to be prominent only in the later stages of the disease.

ULCERATION

Ulceration was present in all cases. In some it was superficial, of slight or moderate degree, and with little penetration of the thickened submucosa by diffuse inflammatory cellular exudate spreading from the ulcer floors. In other cases there was deep ulceration with heavy sloughing, cicatrisation, and contracture, the granulation tissue and subacute inflammatory cell exudate in the ulcer floors spreading deeply into the submucosa and muscularis with the formation of intramural abscesses and multiple fistulæ. All transitions were found between cases in which ulceration was superficial and relatively insignificant and those in which loss of surface and its sequels dominated the histological picture, and it was obvious, from a preliminary survey of the cases, that the variation in the intensity of surface ulceration was almost as striking a feature of the morbid anatomy of the disease as the constancy of submucous swelling. A more detailed survey showed that the degree of stenosis due to submucous thickening might be just as great in cases in which ulceration was superficial and relatively mild as in those in which it was deep and severe. For this reason it appeared likely that submucous thickening preceded ulceration, and that loss of surface might well be the direct consequence of a lesion in the submucous coat. This supposition is strengthened by the fact that perforation is a common but late manifestation of regional ileitis and is invariably localised. If ulceration of the mucous membrane of the relatively thin-walled ileum were the primary lesion, perforation would probably take place earlier and would more often open into the general peritoneal cavity. It appears probable that, when ulceration develops, the bowel is already protected by a thickened submucosa, and perforation takes place against the resistance offered by a thickened and rigid bowel wall.

THE SUBMUCOUS LESION

In cases in which there was relatively little cellular infiltration spreading into the thickened submucosa from the ulcerated surface and this coat was still covered by long stretches of intact mucous membrane two striking changes were constantly found in it. The more prominent was widespread hyperplasia of its lymphoid tissue; the less striking but equally constant change was obstructive lymphœdema. These two processes were obviously sufficient to cause the swelling of the submucosa, even when this was present to a maximal degree. The masses of reacting lymphadenoid tissue in such cases varied considerably in size, the largest forming prominent cellular aggregates 3–4 mm. in diameter and visible to the naked eye, the smallest, about 0·4 mm. in diameter, being microscopic. In three-quarters of the cases the cellular nodules were scattered evenly through the œdematous submucosa, there being 8–18 to the square centimetre. They showed considerable cellular activity. In some there were nothing more than non-specific hyperplasia of reticulum cells and sinus catarrh, each germinal centre in the reacting nodule appearing as a pale-staining cell mass retaining the spherical shape of the germ centre and surrounded by a narrow zone of lymphocytes, the sinusoids between these masses being packed with proliferating littoral cells.

This lesion does not constitute a specific histological picture. It was, however, accompanied by a highly characteristic cellular response in a variable number of the germinal centres making up a nodule of lymphadenoid tissue. The affected germinal centre was entirely replaced by proliferating endothelial cells with weakly-staining nuclei. The peripheral zone of lymphocytes had disappeared and the cell mass had enlarged unequally, until it was several times larger than the germinal centre in which it originated. It had lost its spherical form, had developed a sinuous edge, and was prominent under the low power because of this irregularity in shape and its pale appearance against the dark background of heavily nucleated lymphocytes. In the midst of the cells constituting these endothelial aggregates it was usually possible to identify a Langhans' giant cell, and the lesions, as they became mature, closely resembled the giant-cell systems of miliary tuberculosis.

When several hundreds of these submucous lesions had been examined and compared, it became obvious that endothelial proliferation continued in the giant-cell system until it eventually reached a maximal diameter of approximately four to five times that of the germinal centre which it had replaced, and at this stage it might contain two or perhaps three Langhans' giant cells. When the giant-cell system has reached this size, cell proliferation apparently ceases, the endothelial cells are no longer ovoid and well defined, their cytoplasm becomes scanty and drawn out into fine processes, and there is a decided increase in the reticulin content of the lesion.

This striking retrogression of the giant-cell systems is obviously a slow chronic process and is not accompanied by vigorous fibrosis. In none of the many

examined in this series of specimens has it been possible to demonstrate acid-fast bacilli, nor has there been the slightest evidence of caseation, necrosis or gross destruction of surrounding tissues, and the lesions remain sharply localiséd to the segment of bowel affected.

The degree of lymphoid hyperplasia in the bowel wall varied considerably. Non-specific hyperplasia was found in 95 per cent. of the specimens. Well-defined non-caseating giant-cell systems not containing acid-fast bacilli were found in 13 of the 20 specimens. In 5 of these almost every nodule of lymphoid tissue showed this change in an uncomplicated form. In 7 cases, although non-specific lymphoid hyperplasia was easily recognised, the formation of giant-cell systems was considerably obscured by diffuse inflammatory exudate, fistulæ, fibrosis and cicatrisation. In 2 of these cases giant-cell systems, although absent in the bowel, were present in the regional lymph-nodes. In 5 cases all trace of a specific lesion had disappeared even in the regional glands, and it seemed reasonable to suppose that in these cases the lesion had undergone natural retrogression, for the ulceration and its secondary consequences were identical in these cases and in those in which giant-cell systems could be identified in spite of severe ulceration.

THE GLANDULAR LESION

Probably the most arresting histological feature of regional ileitis is the presence in the regional lymph-nodes of a clear-cut specific formation of giant-cell systems identical with that found in the thickened submucosa. The natural retrogression of this lesion can best be studied in this situation. In cases in which ulceration and its secondary effects are not severe, sections of the regional glands show dozens of lesions, which remain remarkably discrete and retrogress without caseation after reaching a maximal diameter of 0·75 mm. As ulceration becomes deeper, the glandular lesions are obscured by subacute lymphadenitis, and in specimens showing severe ulceration they may be difficult to establish. In such cases a microscopic focus of formation of giant-cell systems was occasionally discovered in one gland of a group, the remainder showing nothing more than non-specific lymphadenitis. This gland was not always the largest of the group. In other cases a section of one large gland has shown 20–30 pale foci of non-caseating giant-cell systems, whereas in a neighbouring gland, equally enlarged, no trace of the lesion could be found. It is essential therefore to examine all available glands when searching for the giant-cell lesion, and it seems very likely that glands containing this lesion must occasionally be left behind at operation.

ÆTIOLOGY

Viewed as isolated and static histological pictures, the giant-cell systems in the glands and bowel are indistinguishable from those of tuberculosis, but their tendency to retrogress without excessive scarring and the absence of caseation and acid-fast bacilli in them force one to doubt their tuberculous origin. In spite of this, tuberculosis cannot be dismissed as an ætiological factor in regional ileitis until it has been excluded by careful cultivation and inoculation of material from a large series of cases. There is solid clinical and radiological evidence against regarding the disease as being a complication of active pulmonary tuberculosis.

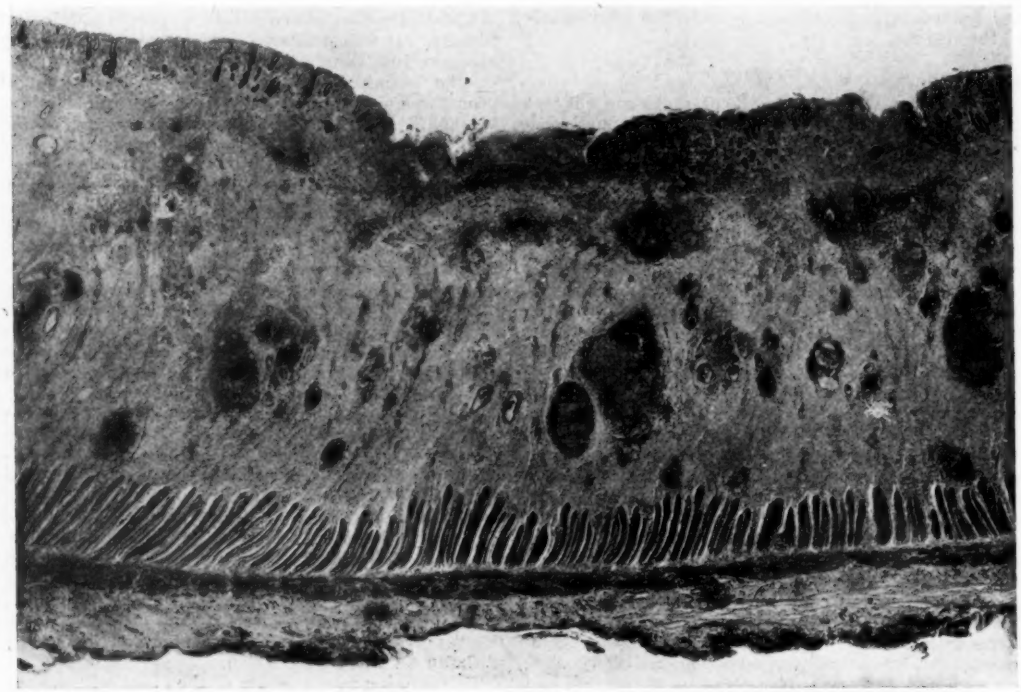

FIG. 1—Ileum, showing early lesion (lymphoid hyperplasia and obstructive lymphœdema of submucosa) and early ulceration. (× 10.)

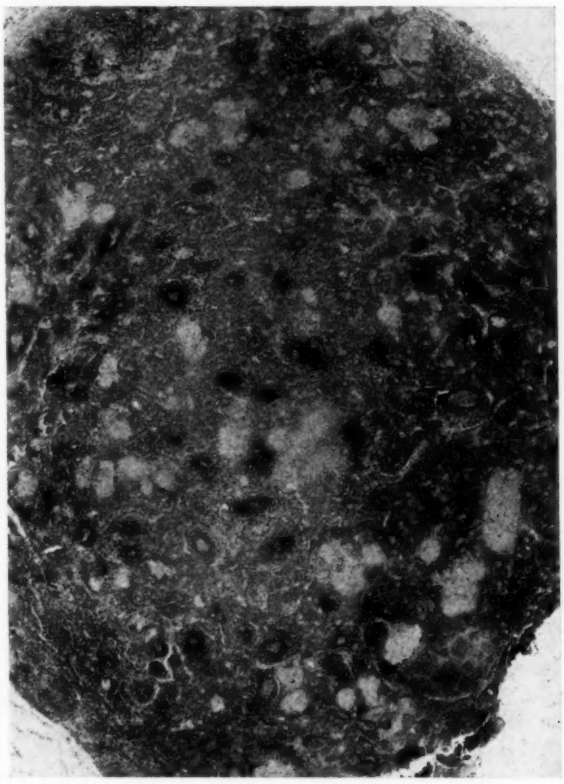

FIG. 2—Lymph-node, showing conspicuous pale areas of giant-cell system formation. (× 12.)

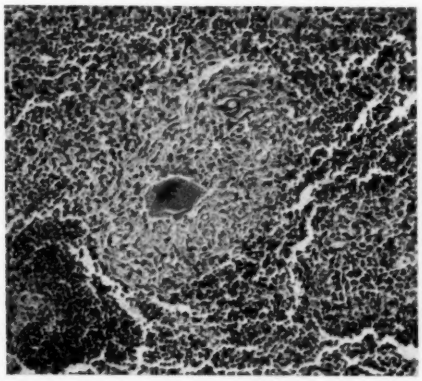

FIG. 3—Giant-cell system in submucosa. (×152.)

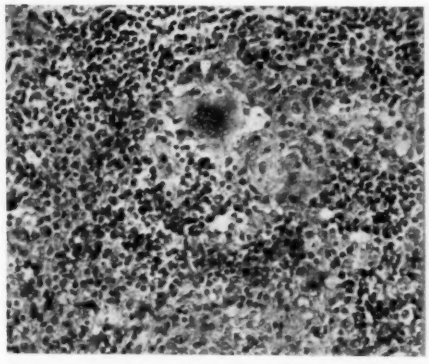

FIG. 4—Early lesion in gland. (× 100.)

From the purely histological point of view the appearance, evolution and retrogression of the giant-cell systems of regional ileitis more closely resemble the tissue reaction of Boeck's sarcoidosis than that of tuberculous infection. There is the same tendency to slow spontaneous retrogression and inconspicuous healing, and in neither disease has a specific infective agent been isolated. According to our present conception of sarcoidosis, its period of evolution varies from ten to fifteen years. During this time there is slow generalisation of the disease in several tissues. In some situations, the mediastinum for instance, the lesion may remain latent for long periods, retrogressing after a period of activity and having room to expand during its active phase. There is no such anatomical safeguard when a granulomatous process attacks the bowel, and, unlike classical visceral sarcoidosis, regional ileitis must declare itself clinically at a relatively early stage. The primary submucous lesion with its accompanying lymphœdema appears inevitably to lead to ulceration, which often produces a considerable degree of destruction of the bowel wall. In three to four years most of the patients have lost 25 per cent. of their body-weight and have developed clinically outspoken chronic intestinal obstruction. At this stage the primary lesion has retrogressed or has been obliterated, and the pathological picture is dominated by secondary ulceration and its consequences. With these facts in mind, it appears unjustifiable to dismiss regional ileitis as having no ætiological relationship with sarcoidosis until a series of cases has been watched over a period of eight to ten years and no sign of generalisation discovered.

CONCLUSIONS

(1) The earliest and possibly the specific histological lesion of regional ileitis is lymphadenoid hyperplasia with the formation of non-caseating giant-cell systems in the submucosa.

(2) Acid-fast bacilli cannot be demonstrated histologically in these lesions.

(3) This lesion is also present in the regional lymph-nodes.

(4) Ulceration and fistulæ are secondary to this lesion in the submucosa and the obstructive lymphœdema which it produces.

(5) Ulceration often obscures and sometimes obliterates the primary lesion in the submucosa. When this has happened, the lesion is not uncommonly found in some or all of the regional lymph-nodes.

The Harben lectures of the Royal Institute of Public Health and Hygiene will be delivered by Sir John Orr, F.R.S., on Oct. 16, 17, and 18, at 3 P.M., at the house of the institute, 28, Portland Place, London, W.1. His subject will be the physiological and economic basis of nutrition. Application for seats should be made to the secretary of the institute.

SULPHAPYRIDINE IN TREATMENT OF PNEUMOCOCCUS (TYPE II) PNEUMONIA

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SEVERAL reports have indicated the value of sulphapyridine * (2 (*p*-aminobenzenesulphonamido) pyridine) in the treatment of pneumonia. So far, however, it has been difficult to evaluate the success of the new therapy in Great Britain, since all the reports have lacked information about one or other of the factors which are of importance in making a critical assessment. It would be difficult to enumerate in detail all these factors but the following particulars appear necessary:—

(*a*) The age- and sex-distribution of the cases studied should be known if different series of cases in different places are to be compared.

(*b*) The rapidity with which cases are sent to hospital varies from district to district. A report should therefore give the duration of the illness before treatment began.

(*c*) The criteria of selection for treatment must be stated. In some areas only those patients with a typical lobar pneumonia are included, while in others the cases comprise lobar and bronchopneumonias.

(*d*) The great majority of pneumonias are pneumococcal in origin, but it is well known that the incidence of the different types varies from place to place and from year to year (Cruickshank 1933), and there are wide variations in the fatality-rates of the different types. To report untyped series of cases can add nothing to our knowledge.

(*e*) Invasion of the blood-stream by the infecting organism renders the prognosis more grave (Bullowa and Wilcox 1935), and the incidence of bacteræmia varies in different series of cases. The presence or absence of bacteræmia should therefore be noted.

We realise that as knowledge of a new method of treatment increases, one or other of the above factors may be found less significant or new factors may arise. At the present time, however, each of the above is important.

The results of a therapeutic study should, ideally, be capable of statistical assessment. But where at least five factors have to be taken into account the number of cases required for strict statistical proof would be very large. On the other hand, if a method of treatment is curative, its application should be followed by constant beneficial clinical effect, and in pneumonia a good means of therapeutic trial is to observe the effect of an identical method of treatment upon a series of cases in which the data above-mentioned have been accumulated.

During the past winter (1938–39) a study of this nature has been attempted in Ruchill Fever Hospital, Glasgow. The purpose of this preliminary report is to record the results of treatment with sulphapyridine of 70 consecutive cases of acute pulmonary inflammation with evidence of consolidation from which a pneumococcus type II was isolated from sputum and/or blood.

* The use of trade names in the description of the sulphonamide group of compounds has already proved confusing. There is little to commend the use of such in medical literature. We have accordingly adopted the suggestion of the council of pharmacy and chemistry of the American Medical Association (*J. Amer. med. Ass.* 1939, **112**, 49) in referring to the drug marketed as M. & B. 693, as sulphapyridine.

METHODS AND MATERIAL

(1) One of us (T. A.) performed all typing and, to ensure uniformity, confirmed the presence of consolidation in all cases admitted to the series. Thereafter the patients were under the clinical supervision of the other joint authors.

(2) As soon as possible after admission, sputum was obtained, and examined by the direct Neufeld capsule-swelling test (Neufeld and Etinger-Tulczynska 1931), using type-specific rabbit serum (Squibb, Lederle). If no type was obtained by the direct examination, 1 c.cm. of emulsified sputum was injected intraperitoneally into a mouse and later the peritoneal exudate and/or heart-blood of the animal examined for typable pneumococci. (In many cases both methods were used, the mouse-typing confirming the result of the initial direct examination.) Before treatment was begun, a blood-culture was performed by inoculating 15 c.cm. of whole blood into 75 c.cm. of veal broth. After 18–36 hours' incubation, 1 c.cm. of this culture was inoculated intraperitoneally into a mouse and the animal later examined for the presence of pneumococci. If present, these were typed by the Neufeld method.

(3) There were no facilities for the confirmation of diagnosis by means of an immediate radiographic examination. (This is unfortunate, for we think it important that the clinical diagnosis should be so confirmed.) In 44 cases, however, the chest was photographed within three or four days of the temperature regaining normal, and the diagnosis of consolidation was confirmed.

TABLE I—AGE- AND SEX-INCIDENCE

Age in years	Male	Female	Age in years	Male	Female
10–20 ..	15	4	51–60 ..	2	3
21–30 ..	9	4	61–70 ..	1	2
31–40 ..	7	3	Over 70 ..	1	0
41–50 ..	9	10	Total ..	44	26

TABLE II

(*a*) ANALYSIS OF CASES

Clinical estimate of severity			Blood-culture			Classification	
Mild	Moderate	Severe	Positive	Negative	Not done	Lobar	Broncho- or atypical
2	42	26	25	37	8	60	10

(*b*) EXTENT OF CONSOLIDATION

L_1	L_2	R_1	R_2	R_3	$R_{1\,2}$	$R_{2\,3}$	$R_{1\,2\,3}$	$L_2\,R_2$
3	28	5	1	21	3	2	2	5

L_1 = left upper lobe, L_2 = left lower lobe, &c.

(4) The cases were examined daily, special attention being paid to the progress of the consolidated lung and the duration of toxæmia.

(5) All cases received sulphapyridine, usually by mouth. An initial dose of 2·0 g. was followed by a dose of 1·0 g. at four-hourly intervals until the

temperature had been normal for forty-eight hours. Thereafter the patient received 0·5 g. four-hourly for four days and a similar dose thrice daily for a further three days.

Table I shows the age- and sex-distribution of the cases. It will be noted that this was a favourable one: 60 per cent. of the patients studied were under the age of forty: 27 per cent. were below twenty.

Table II has been prepared in an endeavour to portray concisely the clinical material studied. No method of classifying the degree of illness is free from individual bias. Type II pneumococcus pneumonia is, however, usually a severe infection. The fact that 40 per cent. of those cases in which blood-culture was performed showed blood invasion suggests that we were not dealing with a mild form of the disease. The high incidence (14 per cent.) of "atypical" pneumonia is probably explained by the circumstance that many of the cases were admitted in January and February, 1939, when there was an epidemic of influenza in Glasgow.

TABLE III—DEATHS

No.	Age and sex	(*a*) Days ill before admission; (*b*) State	Blood-culture on admission	Consolidation	Time in hospital	Remarks
1	75 M	(*a*) 5 (*b*) E.I.	+	R_2	8 days	Myocarditis with fibrillation on admission: Lung did not resolve: Pneumonia spread to L_2
2	50 M	(*a*) 4 (*b*) E.I.	+	$R_{1,2,3}$	2 ,,	Pulmonary œdema present on admission
3	39 M	(*a*) 7 (*b*) M.I.	+	L_2	8 ,,	W.R. +: Chronic alcoholic: Post mortem unresolved pneumonia with early abscess formation
4	49 F	(*a*) 5 (*b*) E.I.	+	R_3	24 hrs.	Pneumococcal meningitis (type II) present on admission
5	41 F	(*a*) 2 (*b*) S.I.	0	R_2	22 days	Delayed resolution and loculated empyema (pneumococcus type II)
6	66 F	(*a*) 6 (*b*) E.I.	0	$L_2 R_3$	8 hrs.	Moribund on admission

E.I., extremely ill; M.I., moderately ill; S.I., severely ill.
+ = Positive. 0 = Not done.
W.R. = Wassermann reaction.

RESULTS OF TREATMENT

(*a*) *Fatality-rate.*—Of the 70 patients, 6 died—i.e., 8·6 per cent. While it is not intended that any strict comparison should be made, this is a low rate for type II pneumococcus pneumonia; in a previous series of 216 type II pneumonias observed in the same hospital by one of us (T. A.) from 1931 to 1934 the fatality-rate was 28·2 per cent. A clinical summary of the 6 fatal cases is given in table III, and it will be apparent that nos. 2, 4 and 6 could be regarded as inadequately treated, since they were very ill on admission and died before treatment could have much effect. The fatality-rate of the cases with a positive blood-culture on admission was 16 per cent.

(*b*) *Duration in days of primary pyrexia.*—Table IV records the duration of pyrexia after admission to hospital. These figures have been arranged in relation to the duration of the illness before admission and refer to recovered cases only. The average duration of the disease prior to admission was 3·3 days. The average duration of fever after admission to hospital was 2·9 days. Study of the table shows that in the majority of cases the temperature became normal earlier than would have been anticipated. Such figures would lead one to expect a similar rapidity in recovery from the illness, but this was not apparent. The patients remained drowsy and depressed and the appetite was poor for a considerable

TABLE IV—DURATION (IN DAYS) OF DISEASE BEFORE ADMISSION, AND PYREXIA AFTER ADMISSION
(Deaths excluded)

Days ill before admission	No. of cases	Pyrexia in hospital (days)					
		1	2	3	4	5	Over 5
0	3	—	2	1	—	—	—
1	12	1	6	3	—	1	1
2	13	1	5	3	2	—	2
3	12	3	6	2	1	—	—
4	8	2	2	2	—	2	—
5	5	—	2	2	1	—	—
6	4	1	—	2	—	1	—
7	3	—	1	1	1	—	—
8	2	—	2	—	—	—	—
10	1	—	—	—	1	—	—
12	1	—	—	—	—	—	1
Total	64	8	26	16	6	4	4

period after their temperature had fallen. (It was hoped that the duration of toxæmia might have been charted in a similar manner, but it was found exceedingly difficult to assess this factor.) The return to normal after treatment with sulphapyridine was usually slow, unlike the immediate change which takes place with a natural recovery.

An attempt was made to correlate the slowness of recovery with the presence or absence of bacteræmia. While the proportion of cases in which fever only lasted one day in hospital was materially greater in those whose blood-culture was negative (16 per cent. against 5) this difference was shortly overcome, so that the proportion in the two groups in which fever lasted three days was almost equal (blood positive, 76 per cent.; blood negative, 78 per cent.).

It seemed to us, however, that this slowness in general recuperation might be explained by the delay in the resolution of the pneumonic consolidation. In almost half the cases the resolution was exceedingly slow, and in some of them signs of consolidation were still evident two or three weeks after the temperature became normal. In fact, of 59 cases in which it was possible to make an assessment, in only 14 (24 per cent.) did the consolidation resolve within a normal period. In many cases dismissal was delayed owing to the presence of extensive fibrosis in the consolidated area. Hence the duration of residence in hospital of recovered cases was prolonged, averaging 30 days (maximum 97 days: minimum 18 days).

(*c*) *Complications.*—Table V shows the main complications encountered. The large number of sterile effusions developing is, in our experience, unusual. In none of them did untoward symptoms arise, and the effusion, after aspiration, cleared up spontaneously. The number of cases developing empyema is not unusual for type II pneumococcus pneumonia. Like others, we have found empyema a more common sequela of type I pneumococcus pneumonia, and the high incidence of empyema recorded by some observers

who have reported series of untyped pneumonias suggests that they were dealing largely with type I infections.

TABLE V—MAIN COMPLICATIONS

Sterile pleural effusion	6
Empyema	3 (1 died)
Meningitis	1 (died)
Severe myocarditis	2 (1 died)
Secondary anæmia	1
Subacute mastitis	1
Conjunctivitis and corneal ulcer ..	1

Besides the above complications directly due to the pneumonia, there were three unusual sequelæ.

One patient (17 years) developed scarlet fever during convalescence. He was a contact in the ward with a patient suffering from a hæmolytic streptococcal pneumonia.

A second patient (48) developed a "reinfection" pneumonia. On admission he was acutely ill with a lobar consolidation of the right lower lobe. Culture of the sputum and blood on admission showed type II pneumococci. The primary pyrexia lasted three days, and during this period he received 6 g. of sulphapyridine daily. On the third and fourth day in hospital he complained of some nausea and the dose of the drug was reduced to 3 g. daily. Symptoms of intolerance increased. He had severe vomiting and abdominal pain and treatment with the drug was discontinued. On the sixth day in hospital he again became severely ill. During the next few days the illness increased and he was found to have extensive consolidation of the lung. This time the sputum was found to contain no type II pneumococci, but types XX and XXX were present. A mouse was inoculated with the sputum and from the peritoneal exudate and heart-blood of the mouse type XX pneumococci only were obtained. (Unfortunately, through an oversight, the blood was not cultured again at this period.) He was unable to retain a sufficient dose of sulphapyridine and the illness ran an extremely stormy course. Resolution was greatly delayed, myocarditis was severe and he was only dismissed after 97 days in hospital.

In a third case the patient complained in convalescence of loss of control of the rectal sphincters. There were no other motor or sensory disturbances. A few days later he had a moderate hæmoptysis for which no explanation could be found, despite repeated radiological and laryngoscopic examinations. This may well have been a chance occurrence: at any rate we could not explain it.

(*d*) *Drug toxicity.*—We found nausea the most common evidence of intolerance to the drug and it was noted in more than half the cases. In 10 cases (14 per cent.), however, nausea and vomiting, often accompanied by epigastric pain, became so severe that treatment had to be stopped. Cyanosis was difficult to estimate, but in 2 cases it was severe and ascribed to the drug. Rashes due to the drug occurred in 3 cases. Diarrhœa and extreme delirium were encountered (1 case each) and attributed to the drug.

Vomiting was not traceable to administration of other drugs in association with sulphapyridine, and the use of glucose or sodium bicarbonate did not relieve either vomiting or nausea. We consider these to be the most serious drawback to the drug. Patients were encountered who pled with us not to give them any more tablets.

Lassitude and mental lethargy were often encountered. The sulphonamide drugs as a group seem to have a general depressant effect, and it was noticeable that patients treated with sulphapyridine required sedatives less frequently than others.

DISCUSSION

Our record shows that the fatality-rate for type II pneumococcus pneumonia was exceptionally low in Ruchill Fever Hospital during the winter of 1938–39. Its fall can be attributed either to a sudden change in the severity of the disease or to the new treatment introduced. While we are of the opinion that the former explanation is partially true, the completely unexpected recovery of a number of critically ill patients has convinced us that much of the benefit came from the introduction of sulphapyridine. The fact that only 40 per cent. of our cases were over the age of forty years, when the prognosis worsens, undoubtedly operated in favour of the low fatality-rate. On the other hand, bacteræmia was present in 40 per cent., which indicates a moderately severe form of the disease.

We are of the opinion, therefore, that sulphapyridine is of considerable value in the treatment of type II pneumococcus pneumonia. Three disadvantages remain to be studied—namely (1) the definite lag in recovery, (2) the delay in resolution of the consolidation, and (3) the gastric upset which sometimes necessitates the stoppage of treatment.

We wish to thank Dr. W. M. Elliott, physician superintendent of Ruchill Fever Hospital, for permission to carry out the investigation; and Mr. Thomas Gallie for his assistance with the laboratory work.

REFERENCES

Bullowa, J. G. M., and Wilcox, C. (1935) *Arch. intern. Med.* **55**, 558.
Cruickshank, R. (1933) *Lancet* **1**, 621.
Neufeld, F., and Etinger-Tulczyuska, R. (1931) *Z. Hyg. InfektKr.* **2**, 492.

PNEUMONIA TREATED WITH M. & B. 693

A REVIEW OF 342 CASES *

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Evans and Gaisford's statement in THE LANCET of July 2, 1938, on the treatment of pneumonia with M. & B. 693, aroused considerable interest among Norwegian doctors, and the preparation was soon in use in our hospitals. We have collected all the records of pneumonia treated with M. & B. 693 at the different departments of medicine in Norway between the middle of October, 1938, and the beginning of May, 1939. Though the material is taken from different parts of the country it is nevertheless sufficiently homogeneous to be dealt with as a whole.

Clinically the cases fall into two main groups—namely, lobar pneumonias and atypical pneumonias. The second comprises all those that did not reveal the typical picture of a lobar pneumonia, and it largely consists of those ordinarily described as bronchopneumonias.

In order to obtain, as far as possible, an objective basis for judging the effect of the drug we have found it necessary to exclude cases in which the diagnosis

* Summary of a communication to the twelfth Northern Congress of Internal Medicine. For further details see *Nordisk Medicin* for June 24, 1939.

was doubtful; those in which the pneumonia was secondary to other diseases or followed operation; those in which improvement seems to have set in before treatment started; those in which empyema was present on admission to the hospital; and those in which the patient died within twenty-four hours of admission (9 cases).

In 68 per cent. of cases the chest was radiographed, in 57 per cent. the sputum was examined bacteriologically, in 38 per cent. blood-culture was performed, and in the majority of the cases the leucocytes were counted at regular intervals.

FATALITY-RATES

As regards the immediate action of M. & B. 693 our experience accords with that of other investigators and needs no description. We shall concentrate rather on the effects which, because of its size, our material appears especially capable of illustrating—particularly the effect on the case-mortality.

Excluding the 9 who died within twenty-four hours of admission 20 out of 342 patients died—a fatality-rate of 5·8 per cent. (table I). If the 9 are included the fatality-rate is 8·3 per cent. During the period under review all cases of pneumonia received M. & B. 693, and we thus cannot provide simultaneous control material. Previous statistics, however, show that the fatality-rate of all pneumonias (lobar + atypical) at the Oslo municipal hospital at Ullevål during the years 1928–38 varied between 20·5 and 35·2 per cent.

A glance at our lobar pneumonias treated with M. & B. 693 shows an even more conspicuous decrease in case-mortality. During the period 1928–38 the figure varied between 17·8 and 34·8 per cent., but after M. & B. 693 was introduced it fell to 4·3 (table I). For atypical pneumonias the numbers are too small to permit of definite conclusions.

If the total material (lobar + atypical) is divided into two groups composed of individuals under and above fifty years of age the younger group shows a case-mortality of 2·8 per cent. and the other one of 14 per cent. (table II). For lobar pneumonias (254 cases) the corresponding figures are 1·6 per cent. (193 cases) and 12·9 per cent. (but only 61 cases, cf. table III). At Ullevål Hospital the mortalities for the same age-groups in 1916–32 were 12·6 per cent. and 44·4 per cent. respectively.

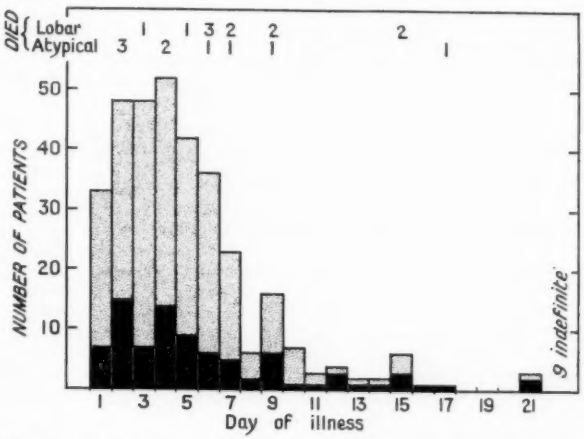

Chart showing the day of illness on which treatment started. The stippled columns represent lobar pneumonia and the black columns atypical pneumonia.

TABLE I—FATALITY-RATES

—	No. of cases	Died	Mortality (%)
Total excluding deaths within 24 hr.	342	20	5·8
Total including deaths within 24 hr.	351	29 (20+9)	8·3
Lobar	254	11	4·3
Atypical	88	9	c. 10

TABLE II—AGE-DISTRIBUTION

Age	0–2	3–10	11–20	21–30	31–40	41–50	51–60	61–70	71–80	81–
No. treated	28	29	43	46	52	51	40	32	15	6
Died	2	0	0	1	1	3	3	4	4	2
Mortality	2·8%						14%			

TABLE III—LOBAR PNEUMONIAS

—	Treated with M. & B. 693		
	No.	Died	Mortality (%)
Under 50 years	193	3	1·6
Above 50 years	61	8	13

FATAL CASES AND COMPLICATIONS

Of the 20 patients who died 6 were over seventy years of age. In all the 11 fatal lobar pneumonias the process affected more than one lobe, whereas this was true of only 33 of the 243 who recovered. Approximately half (9) of the fatal cases already had a disease which must be assumed to have influenced the course of the pneumonia. Of the 11 lobar-pneumonia patients who died, only 2 came up for treatment during the first five days of the illness (see figure).

The following complications were noted:—

Pleural effusion	18	Diarrhœa	3
Otitis	9	Phlebitis	3
Bacteræmia	6 (1 fatal)	Delirium tremens	2
		Pericarditis	2
Jaundice	5	Delayed resolution	1
Empyema	4	Lung abscess	1
Auricular fibrillation	3 (1 fatal)	Paroxysmal tachycardia	1
		Pneumothorax	1

Under pleural effusion are included only those cases in which this was definitely demonstrable clinically. It will be seen that of the patients with complications only 2 died.

Blood-culture was attempted in 121 cases, or about a third of the series. The low figure for positive blood-cultures must be put down to the fact that in 40 cases the blood was taken as early as the second or third day of illness when a positive finding is rare, and to the fact that in 90 cases it was taken after the commencement of therapy.

SPUTUM

In 253 cases sputum was obtainable; in 89 it was lacking. In 212 cases the sputum was bacteriologically examined, and the results were as follows:—

Pneumococci present 197 (144 typed)
" absent 15

The distribution of pneumococcal types in the 144 typed cases is shown in table IV. It will be

TABLE IV—TYPING OF PNEUMOCOCCI IN SPUTUM

Type	Number	Lobar	Atypical	Died
I	49	46	3	3
II	3	3	—	—
III	27	25	2	1
IV	7	6	1	—
VI	3	1	2	—
VII	15	15	—	—
VIII	11	10	1	—
XIII	1	1	—	—
XIV	2	2	—	—
XV	1	1	—	—
XVI	3	1	2	—
XVII	4	2	2	—
XVIII	3	3	—	—
XIX	5	5	—	1
XX	3	3	—	1
XXII	1	1	—	—
XXIII	1	1	—	—
XXIV	1	1	—	—
XXV	3	2	1	—
XXXII	1	1	—	—
Total ..	144	130	14	6

seen that the commonest were I–III and VII which between them accounted for 64 per cent. of all the types found. Our investigations do not permit of any conclusions as to the relation of the type and the case-mortality; but we would call attention to the fact that out of 27 cases of type III only 1 died.

THE TREATMENT

Treatment with M. & B. 693 has generally followed the plan advised by the manufacturers, Messrs. May and Baker, and for the 284 patients over ten years of age the average total dose has been 22 grammes. On the basis of the present material we dare not assert what dosage is best. This question will probably be answerable only by comparing clinical results with serial determinations of the concentration of the medicament in the blood.

The figure shows the time at which treatment commenced in the main groups. It will be seen that of the 78 lobar penumonias admitted after the fifth day of illness 9 died, while of the 171 cases admitted in the first five days only 2 died.

EFFECT ON THE TEMPERATURE

Among our 342 cases 90 showed a critical fall in temperature. In 227 cases the temperature fell by lysis—usually in the first forty-eight hours. In 25 cases there was only a temporary effect on the temperature or none at all. Of these 25, 20 died, but in the remaining 5 (3 lobar and 2 "atypical") the temperature seems to have been entirely unaffected by M. & B. 693 despite comparatively big doses. One was of a type I infection, one a type XIX, and in the third the reddish sputum was not examined bacteriologically.

In 47 cases there was a secondary rise in temperature, for no apparent reason, though in 4 it may have been caused by the drug. In only a few cases did it seem that the secondary rise was due to a relapse—probably developing because the medicine had been withdrawn too early, for the fever rapidly disappeared on renewal of treatment. The secondary rise was usually insignificant (below 100·4° F.) and was apparently unaffected by the drug.

TOXIC EFFECTS

Cyanosis was common and many patients complained of nausea and of feeling unwell. Many vomited, but often they did not do so till about an hour after the drug had been administered. In 6 per cent. the vomiting was severe enough to render treatment difficult, and in a couple of cases the use of M. & B. 693 had to be stopped.

No case was observed in which the therapy could definitely be shown to have caused anæmia. In 3 patients the hæmoglobin dropped to 70 per cent., but such a fall may well be ascribed to the illness. In a majority of cases the leucocytes were counted at intervals of a few days: in 9 patients the count fell to 3000–4000 per c.mm. and in 2 others it fell to 2000–3000. Agranulocytosis was observed in one single case—that of a boy of thirteen whose leucocytes dropped to 2200 (2 per cent. monocytes, 98 lymphocytes, and no granulocytes at all). This patient recovered after treatment with liver extract and Nuclosin; his illness is more fully reported by Bj. Fretheim in *Tidsskrift for den Norske Lægeforening*, 1939. **59**, 702.

A rash was noted in 7 patients and in 3 of these it was accompanied by a rise in temperature (drug fever). There was hæmaturia for a short time in 2 of the cases and 2 others had mild diarrhœa.

SUMMARY

This report summarises observations on 342 cases of pneumonia (254 lobar and 88 "atypical") treated with M. & B. 693 in various Norwegian hospitals between October, 1938, and May, 1939. Excluding those in which the patient died within twenty-four hours of admission the fatality-rate is 5·8 per cent., while if these are included the rate is 8·3 per cent. For the lobar pneumonias (254 cases) the case-mortality is 4·3 per cent., and for lobar pneumonia in persons under fifty years of age (193 cases) it is only 1·6 per cent. Of the 78 patients with lobar pneumonia admitted after the fifth day 9 died, whereas the 171 admitted earlier in their illness included only 2 deaths.

The commonest complications were pleural effusion (clinically demonstrable in 18 cases) and otitis (9 cases); empyema developed in 4 patients.

Pneumococci from the sputum were typed in 144 cases, and 64 per cent. were found to belong to types I–III and VII. Of 27 patients with a type III infection 1 died.

The average dose of M. & B. 693 administered to 284 patients of more than ten years of age was 22 grammes. Excluding fatal cases, a rapid effect was produced in all cases treated except 5 in which the temperature and course of the disease seem to have been unaffected by the drug.

In 47 cases there was a renewed rise in temperature without any demonstrable complication, but this secondary rise seldom went above 100·4° F.

The toxic effects included nausea, vomiting and cyanosis. Vomiting made treatment difficult in 6 per cent. of the cases. Drug fever was diagnosed in 4 patients; in 3 of these and in 4 others there was a rash. In 11 cases leucopenia was found and in 1 case agranulocytosis, followed by recovery. Hæmaturia developed in 2 cases and diarrhœa in 2.

DEFECTIVE HEARING AND NUTRITION IN CHILDREN

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THAT many school-children have slight defects of hearing has become evident both in England and America, since mass testing of hearing has become relatively easy and accurate through the use of the gramophone audiometer. Their number amounts to about a third of a million in England. Middle-ear disease is the usual cause of the defect; it may lead to deafness sufficient to be an immediate handicap, but more often it produces a disability only in later life when the damaged tissues contract with age. Many patients attending a hearing-aid clinic trace their "ear trouble" back to discharging ears in childhood.

Incidence of Deafness

Severe deafness is not common among children. In England about 0·1 per cent. of children attending public elementary schools are deaf enough for special educational provision to have been provided for them. Even if the basis of admission of deaf children to special schools were widened to include some children with minor defects at present in the ordinary schools, the number would probably not exceed 0·15 per cent. These figures are based on the report of the committee appointed by the Board of Education (1938) to inquire into problems relating to children with defective hearing.

In a survey of the London children in the schools for the deaf and partially deaf I found that about half of them were born deaf and about a third were deaf as a consequence of middle-ear disease (Kerridge 1937). The middle-ear disease was a complication of a specific fever in about half of the otitis cases. The number of cases so caused may be expected to decrease with improvements in treatment of the specific fevers, and it will be particularly interesting to see what ultimate effect the sulphonamide drugs have on this cause of middle-ear disease and deafness.

Since it is well known among otologists that chronically discharging ears are much commoner in hospital practice than among private patients, one or more of the factors associated with poverty may be supposed to be a contributory cause or an obstacle to the cure of the condition. Middle-ear disease being the result of an infection, it may be supposed that an estimate of its incidence in a child population would be a measure of the resistance to infection of that community; but the matter is not simple, as the following facts show: (1) the virulence of the initial infection may vary in different localities and epidemics; (2) chronic discharge may be kept up by the presence of debris in the ear which requires surgical removal, which may or may not be adequately dealt with, for some parents seem to regard a discharging ear in a child as insignificant and not worth medical attention; (3) middle-ear disease may be catarrhal and not suppurative; and (4) since the resulting deafness depends on the amount of the subsequent contraction of the tissues besides the damage at the time of the infection, obviously a simple quantitative relation cannot be expected between the resistance to infection and the degree of deafness.

Plan of Investigation

The research described in this paper was planned in the hope that some indication might be found for the prevention of deafness due to middle-ear disease. Some of the factors associated with chronic middle-ear disease in children have been investigated. It was decided to test the acuity of hearing of sample groups of children in Great Britain who lived under different social conditions. In one series the groups were chosen from good environments in private preparatory schools, high schools, and grammar-schools, both day-schools and boarding-schools; in another series the children were in public elementary schools or in ecclesiastical orphanages. The latter were chosen because they represented institutions which were hard-pressed for funds. All the children tested were between 7 and 14. In children under 7 it is not always easy to get coöperation for an exact test, even if the children are tested individually, and any form of selection of children was considered inadvisable for the present purpose. Children over 14 were not tested, because it was difficult to collect many in the group with the poor social conditions, for they leave school at or soon after that age.

The children were tested in batches of 30–40 with a gramophone audiometer. This instrument and its use are fully described in the report of the Board of Education (1938). The newer English record was used, which has two columns of three-digit numbers. Every child was given a second chance of doing the test before being classed as a failure, the second test being done on the same day as the first to eliminate failures caused by misunderstanding or by lack of attention. It did not avoid failures due to temporary respiratory infections.

Children who failed the second time were tested individually, and in most cases a teacher's report on their mental capabilities was obtained. But, although it was desirable not to include as failures due to defective hearing those children who were so mentally backward that they could not do the easy test, the two factors are not easy to separate in the younger children. A child may be slow at school because he cannot hear easily, or because of poor health and spirit due to any cause of minor chronic ill health, including middle-ear disease, or because of absences from school on that account or by reason of more than one of these excuses. However, the proportion of cases in which there was doubt as to the true cause was small. A medical history was obtained whenever possible, but these were of very varying reliability.

The ears were examined with an auriscope to detect wax; but, since time did not permit of retesting after removing the wax, some of the failures attributed to wax in the ears may have been partly due to middle-ear disease. Finally the child was tested with a pure-tone audiometer by air and bone conduction for acuity of hearing over the auditory spectrum. In this way the amount and the location of the defect to the middle or inner ear could be determined.

Results

Children with good social conditions.—The findings in about 1000 such children are summarised in table I, section 1. In those schools in which there were children attending on scholarships gained from elementary schools the results of such children were subtracted from the bulk. In other words, the parents of all the children considered in this series were paying school fees and may therefore reasonably be supposed to have had sufficient money for adequate food and housing of their children. There is no significant difference between the results in boarding-schools and in day-schools. In this series the failures attributable to middle-ear disease were usually due

TABLE I—DEFECTIVE HEARING IN CHILDREN UNDER VARIOUS SOCIAL CONDITIONS

(1) GOOD SOCIAL CONDITIONS

School	Boarders or day-pupils	Sex	Number tested	Failures (per cent.)
Secondary (Kent) ..	B & D	G	122	3·2
High (London)	D	G	274	3·3
Preparatory M (London) ..	D	B & G	52	7·4
Preparatory N („) ..	B & D	B	175	1·7
Preparatory (Oxford) ..	B & D	B & G	245	3·3
High (East Anglian town)	D	G	82	0·0
Grammar („ „)	D	B	99	1·0
	Total ..		1049	2·8

(2) POOR SOCIAL CONDITIONS

Public elementary schools—				
Housing-estate (near London)	D	B & G	2754	13·5
Industrial town (near Manchester)	D	B & G	1338	11·4
East Anglian town ..	D	B & G	1344	10·6
„ (poorest quarter)	D	B & G	(93)	(22·6)
Orphanages—				
A (near Manchester) ..	B	B & G	65	7·7
B („) ..	B	B & G	55	9·1
C („) ..	B	B & G	70	10·0
D (Scotland)	B	B & G	250	22·8
	Total ..		5876	12·1

to a past acute attack. In many cases, however, the same medical history was obtained, including a mastoid operation, and the child passed the test easily. There was no case of chronic discharging ear in this group. The mean failure-rate was 2·8 per cent., and the range 0–7·4 per cent.

Children with poor social conditions.—These results, in nearly 6000 children, are summarised in table I, section 2, which shows figures very much higher than in section 1, the mean being 12·1 per cent. and the range 7·7–22·8 per cent. So that the comparison shall be more accurate, the results are given in fig. 1, calculated with regard to the numbers of children at each age. This is a fairer comparison because the incidence of the disease decreases with age, and the distribution of children between 7 and 14 was not equal in the two series. Fig. 1 shows that the children

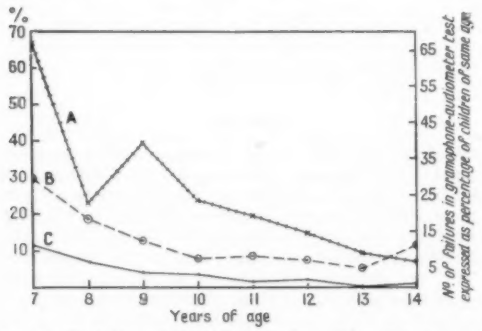

FIG. 1—Variation of defective hearing with age between 7 and 14 years: A, 255 children in a Scottish orphanage; B, 5840 children in public elementary schools; C, 1048 school-children whose parents paid fees.

with the poorer social conditions had a higher incidence of defective hearing at each age, and that the school with the highest average incidence also had a high figure throughout the period of child life under consideration. The differences are statistically significant. (We are indebted to Dr. F. N. David, lecturer in statistics at University College, for advice on this point.) The improvement in middle-ear disease with increase in years is usually attributed to anatomical changes, which make it more difficult for infections of the nasopharynx to spread to the middle ear, because the eustachian tube becomes relatively narrower and more oblique.

Taking the average figures, it may be said that defective hearing is about four times as common among the children under the inferior social conditions as it is among the children whose conditions may be considered adequate on modern English standards. In the worst cases the incidence may be nearly ten times as high as in the good conditions, and nearly a quarter of the children may have impaired hearing.

The figures for the failures at 13 years for the children at public elementary schools and for fee-paying children are 5 per cent. and 0 respectively. (At 14 the numbers of children in the elementary-school group are small, for many of the children leave school because they obtain employment; hence 13 has been taken for this comparison.) That the failure-rate may remain high during adolescence among children who have come from poor environments is shown by an investigation of boys in an industrial school in Scotland, where the failures, in summer, of boys between 13 and 16 were 17 per cent.

TABLE II—CHILDREN WITH DEFECTIVE HEARING IN PUBLIC ELEMENTARY SCHOOLS IN A HOUSING-ESTATE NEAR LONDON, SUBDIVIDED INTO BOARD-OF-EDUCATION GRADES

—	Number of children	Per 1000 children tested
Grade 1	380	129
Grade 2	3	1
Grade 3	1	0·3

Grade 1: children with defective hearing who can, nevertheless, without special arrangement of any kind, obtain proper benefit from the education provided in an ordinary school—elementary, secondary, or technical.

Grade 2: children whose hearing is so defective that they require for their education special arrangements or facilities but not the educational methods used for deaf children without naturally acquired speech or language. These facilities range from a favourable position in the ordinary school class-room to attendance at a special class or school.

Grade 3: children whose hearing is so defective and speech and language are so little developed that they require education by methods used for deaf children without naturally acquired speech or language. This grade includes the totally deaf.

DEGREE AND CAUSES OF DEFECTIVE HEARING

Most of the hearing-defects detected were slight, and the children would have been classed in grade 1 of the Board of Education's categories, because they might have profited from medical examination and treatment but were not sufficiently deaf to be handicapped educationally. A small minority of the children without doubt should have been classed as grade 2, as requiring special facilities or arrangements, such as a favourable position in class-room and in some cases a simple hearing-aid, and they would have been helped by an ability to lip-read. The numbers of such children could not be assessed, for it was impossible to discuss each child with his teacher in the time available. As is pointed out in the Board of Education report (1938), the disability

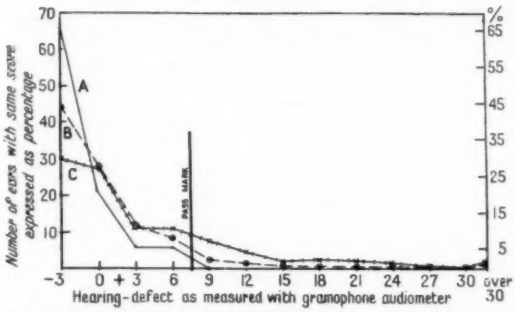

FIG. 2—Hearing of school-children in an East Anglian town: A, 181 children whose parents paid fees; B, 1344 children in public elementary schools; C, 93 children, attending public elementary schools, from the poorest quarter of the town.

of a deaf child depends on his intelligence besides the amount of his hearing-defect, and grading cannot be done as a result of a medical examination alone. The more severely deaf children from the areas tested were already in schools for deaf children, but their number is relatively small. In one district particulars were obtained of such children, including an audiogram of their hearing. In this case, therefore, a complete grading of the children with defective hearing can be given, as in table II. This community is, however, not altogether typical, for it consisted of children living in a new housing-estate, with more uniformity of social conditions than would be found in most districts.

In those districts and institutions where the incidence of defective hearing was higher than the average, the degree of defect was also much greater. This important point is illustrated in fig. 2, which relates to the East Anglian town tested. The amount of the defect has been plotted against the relative number of times it was observed in the case of (1) the high-schools and grammar-schools, (2) the elementary schools, and (3) the school in the poorest part of the town. The curves broaden with the increase in poverty, showing that the greater defects were commoner with the poorer conditions. In the best schools no child had a worse score than 9; in the poor schools some exceeded 30 decibels from the mark considered normal for the average child in the average class-room.

TABLE III—CAUSES OF FAILURES IN GRAMOPHONE-AUDIOMETER TEST OF CHILDREN IN THE EAST ANGLIAN TOWN

Type of school	Cause of failure	Cases (per cent.)
High schools and grammar-schools	Past middle-ear disease	0·5
Public elementary	Wax	1·3
	Mental backwardness	1·2
	Middle-ear disease	8·1
—	Total ..	10·6

The causes of deafness among the children in the East Anglian town are summarised in table III, which is typical of figures found elsewhere. At least 80 per cent. of the failures are attributable to middle-ear disease, either suppurative or catarrhal. No case of inner-ear deafness was found among the children in the survey. It would have been detected in the pure-tone-audiometer test by abnormalities in bone conduction. Any child with severe inner-ear deafness would have been already removed to a school for deaf children. No evidence, therefore, was found of inner-ear deafness similar to that observed by Mellanby (1938) in animals suffering from a deficiency of vitamin A. It is, however, possible that some of the cases of unknown ætiology in the schools for severely deaf children may be due to this cause. In my survey of children in the London deaf schools the number in which the cause was unknown was 11·5 per cent.—i.e., 0·01 per cent. of the school population of Great Britain (Kerridge 1937).

SEASONAL VARIATION IN ACUITY OF HEARING

There is a well-recognised seasonal variation in catarrhal conditions, and the present work would be seriously incomplete if some attempt had not been made to assess the effect of the time of the year on the acuity of hearing, for catarrhal middle-ear disease is so prevalent. Apart from this, seasonal changes make a difference to food, the amount of open-air life, and general health. It was impossible to test all the children in both summer and winter. Besides general difficulties of time and place, full summer in England and Scotland is very short when the school holidays are subtracted from it. As a more practical measure the groups which gave the worst results in the winter—i.e., the Scottish orphanage, and the two worst schools in the East Anglian town—were revisited in the summer. The Scottish orphanage was again visited in the following winter. Table IV shows that the figures, although lower in summer than in winter, are still high compared with other places. Besides this, the housing-estate was revisited in the summer, and those children who had failed in the winter were retested. Two-thirds of these passed the test in the summer, although they had had no treatment. This result, however, is not comparable with those in table IV, for all the children on the housing-estate were not retested. In the Scottish and East Anglian schools the lists of failures were not identical in the two seasons, some children passing in the winter and failing in the summer, and vice versa. This is not surprising, for a very slight change in the physical condition of the middle ear can make a great difference to the mobility of the moving parts of the cavity and so influence the efficiency with which sound is conducted across it. The degree of deafness in middle-ear disease is well known to be variable by those who suffer from it.

TABLE IV—SEASONAL VARIATION IN DEFECTIVE HEARING IN CHILDREN

—	Failures in gramophone-audiometer test (per cent.)		
	Jan., 1938	July, 1938	Jan., 1939
Orphanage D (Scotland) ..	22·3	15·3	21·0
	April, 1938	July, 1938	
East Anglian town—			
School x	22·6	14·3	
School y	14·0	14·4	

FACTORS IN POOR SOCIAL CONDITIONS

Most investigators of social conditions encounter difficulties in the analysis of the manifold factors which comprise them, and the same problems were met in the present work. The following remarks

TABLE V—ASSESSMENT OF DIET

—	Families in group	Cals.	Prots.*	Carb.	Fat	Ca.	P.	Total Fe.	Avail. Fe.	Vitamins		
										A	B	C
			g.	g.	g.	g.	g.	mg.	mg.		complex	
East Anglian town (poorest quarter)[1]												
Families spending less than 5s. per head per week on food; average intake per head per day	47	2076	53 (18)	316	61·9	0·354	0·756	8·43	6·33	1357	240	593
Mean of all families tested; average intake per head per day	157	2780	72·2 (29·4)	324	99	0·58	0·83	11·9	8·68	2380	389	923
East Anglian town (poorest quarter)[2]												
Poorest families only												
Average intake per head per day	9	2090	52·6 (25·3)	307	71·8	0·432	0·798	8·93	..	2080	331	646
Average intake per man value per day	..	3150	79 (39·1)	462	108	0·646	1·196	13·4	..	..	..	..
Industrial town near Manchester[1]—												
Average intake per head per day	35	2550	62·4 (29·0)	350	94·6	0·562	0·964	11·82	..	2730	353	743
Average intake per man value per day	..	3220	78·6	442	124·5	0·717	1·23	15·2	..	..	..	..
Orphanage D (Scotland)[1]—												
Intake per head per day	..	2315	71·7 (31·4)	401·6	55·2 (29·9)	1·035	1·502	12·0	..	920	532	964
Estimated requirements	..	2326	85·1	..	100	1·08	..	12–15	..	5000	480	1500

* Numbers within brackets in the protein column are estimates of animal-protein intake.

1. Figures of Rowett Research Institute, 1938. 2. Figures of Ministry of Health, 1937.

must therefore be taken not as a strictly scientific dissection of the sole factor among the social conditions which is particularly noxious as regards hearing but as a practical attempt to see whether the results obtained indicate the most likely factor.

All the children, being school-mates, mixed together by day, and some children in both good and poor social groups were in residential institutions. Since some of the results were very good and there was no difference between day-schools and boarding-schools, the mere herding of children does not seem to have been harmful in this respect. Nor does housing seem to be the chief factor, for the children in the orphanages near Manchester (with fair results) and the Scottish orphanage (with bad results) were all well housed besides having a resident staff who supervised the children's cleanliness and health. The results at orphanages near Manchester did not differ from those of the children in the neighbouring town, where the parents worked in the mills and the houses were crowded. The bad results in the Scottish orphanage are very similar to those in the worst part of the East Anglian town and to a poor quarter in America. Gardner (1938), reporting on the results of gramophone-audiometer tests on 46,095 pupils in Iowa schools, said that the failures usually varied from 3 to 12 per cent., and that in a poor economic district the incidence was 22 per cent. The similarity of these figures to those found in the present investigation is very striking.

Climate also seems to have less effect than might be supposed, the figures for the damp districts round Manchester, the housing-estate near London, and the elementary schools in the East Anglian town being very similar, although the average rainfall for one of the towns near Manchester is about twice that of the East Anglian town (43·2 in. and 23 in. respectively). The high failure-rate obtained in the Scottish orphanage cannot be attributed to the rigours of the climate or to difficulties experienced by Scottish boys in understanding numerals spoken by an Englishman (as was suggested), for in another Scottish residential school in a similarly exposed position as regards climate the failures amounted to 1 per cent. only. This school was for the sons of Scottish men in the Army, Navy, or Air Force, and it has not been included in the general comparison, for the pupils were unique in having a strict medical inspection on entry to the school and at weekly intervals thereafter.

NUTRITION OF THE CHILDREN

The children in the two series did, however, differ greatly in the food they obtained. Some of the districts in which children were studied were chosen because dietary surveys had been carried out there either by the Ministry of Health or by the Rowett

TABLE VI—DIET OF SECONDARY SCHOOL IN KENT WITH 3·2 PER CENT. FAILURES IN HEARING-TEST

Breakfast	11 A.M.	4 P.M.	High tea
Daily: porridge (except Sunday), tea, bread (white and brown), butter, syrup or marmalade, all as much as required, oranges	Milk, ½ pint	Milk, ½ pint	Tea, bread and butter as much as required, oranges
In addition:	Dinner		
Monday: baked beans	Stewed steak, carrots, potatoes, jam roly		Macaroni cheese, brown sugar
Tuesday: potato cakes	Sausages, greens, potatoes, ground rice mould, jam		Bacon, honey
Wednesday: haddock	Steak and kidney pies, peas, potatoes, stewed apricots and custard		Baked potatoes, cheese
Thursday: ham ..	Rissoles, greens, potatoes, cake pudding, syrup		Boiled eggs, jam
Friday: salmon paste	Fish pies, onions, steamed chocolate pudding and sauce		Welsh rarebit, dates
Saturday: bananas	Boiled salt beef, potatoes, beans, brown bread, honey, apples		Spaghetti on toast, jam
Sunday: sausages..	Cold salt beef, baked potatoes, beetroot, apple pies, hard sauce		Gingerbread, biscuits, jam

Daily at bedtime: apples.

Research Institute. The places for which such data were available were the poorest schools in the East Anglian town, the Scottish orphanage, and part of the industrial town near Manchester. Both the Ministry of Health and the Rowett Research Institute have used the same food-analysis tables in compiling their results, details of which will be given when their results are published. The diet results relevant to the present survey are summarised in table V, which shows that the diets of the children in the groups which suffer most from middle-ear disease are low in total calorific value, in protein (particularly animal protein), and in vitamins. This coincidence of deficient diet and the high incidence of hearing-defects may mark an interrelation; but the fault cannot be traced to a specific food component, because so much is lacking in some of the diets. The differences between the food obtained under the different social conditions is seen perhaps more vividly, if less scientifically, when the menus for a week are compared in one of the secondary schools in the good group, an orphanage near Manchester, and the Scottish orphanage (tables VI–VIII). As part

TABLE VII—DIET OF ORPHANAGE A, NEAR MANCHESTER, WITH 7·7 PER CENT. FAILURES IN HEARING-TEST

—	Breakfast	Dinner	Supper
Monday ..	Porridge, cocoa, bread and margarine + 10% butter	Stew, potatoes, vegetables, bread	Bread and jam or dripping, cocoa
Tuesday ..	„	Sausage, potatoes, peas, bread	„
Wednesday	Bread and margarine-butter mixture, cocoa	Pea-soup with vegetables, bread, rice pudding with raisins (condensed milk)	„
Thursday .	As Monday	Mutton stew, potatoes, vegetables, bread	„
Friday ..	As Wednesday	Fish cakes, potatoes, butter beans, bread, sago pudding (condensed milk)	Bread and margarine - butter mixture
Saturday..	„	Minced meat, potatoes, onions, green peas, bread	As Monday
Sunday ..	As Monday	Sausages, potatoes, butter beans, bread, stewed figs, custard	Bread and margarine - butter mixture, cake, tea

of the investigation for the Carnegie Trustees, the children in the Scottish orphanage and in the poorest quarter of the East Anglian town have been given extra food for a year. Hearing-tests have been repeated in these districts at the end of the feeding experiment, but the incidence of hearing-defect in both cases was found to be unchanged. The results of this experiment (which will be given more fully in the report of the Carnegie investigation) are disappointing but not surprising. The prevention of a disease is a different matter from its cure; not all damaged tissues can be effectively repaired.

Conclusion and Summary

The work here described has given numerical expression to the clinical opinion that middle-ear disease is very common among the children of the poorer classes. It is about four times as common, on the average, under poor social conditions as it is under good social conditions; in the poorest places,

TABLE VIII—DIET OF ORPHANAGE D (SCOTLAND) WITH 22·8 PER CENT. FAILURES IN HEARING-TEST

	Breakfast	Tea
Daily:	porridge (except Sunday), skimmed milk, scones, margarine	Brown bread (1 slice), white bread (1 slice), tea
In addition:	Dinner	
Monday ..	Scotch broth, bread, treacle pudding	Syrup
Tuesday ..	Cottage pie, turnips, rice pudding	Margarine, dates
Wednesday ..	Lentil soup, bread, sago pudding	Syrup
Thursday ..	Stewed beef soup, vegetables, bread, semolina pudding	Margarine, dates, pastries
Friday	Split-pea soup, bread, steamed fig pudding	Margarine, cheese
Saturday ..	Minced beef, potatoes, rice pudding	Jam
Sunday:	fried bread, tea, bread, marmalade	Corned beef, potatoes, sago pudding and prunes	Margarine, gingerbread, orange

Daily at supper: cocoa, 2 cakes

whether urban or institutional, it may be nearly ten times as common as in a good environment, nearly a quarter of the child population being affected. Climate, housing, and the mixing of children seem to have little effect on the incidence of the disease.

The children with the highest incidence of defective hearing had diets deficient in many factors, but an increase in the food taken by two groups of these children for a year did not reduce the incidence of defective hearing.

The figures here given show that probably the most important work on the prevention of deafness will be done by those who are striving to improve the social conditions and, in particular, the nutrition of the nation. Many writers on diet have discussed the relative effects of ignorance and poverty on mal-nutrition, and most are agreed that where there is sufficient money nutrition is usually adequate, and that it takes knowledge and careful skill to provide adequate nourishment for a family when money is scarce. One of our most regrettable findings is that shortage of money makes the conditions so unsatisfactory in institutions in which the staff have the necessary knowledge as to how children should be looked after. Here again the prevention of deafness is in the hands of the administrator.

The Ministry of Health and the Rowett Research Institute very kindly gave permission for the results of their dietary surveys to be used in this article, and thanks are specially due to Dr. H. E. Magee, Sir John Boyd Orr, and Mr. David Lubbock. The expenses of the research were paid by the Medical Research Council. To the London School of Hygiene and Tropical Medicine and to the National Institute for the Deaf we are indebted for the loan of apparatus, and we thank also the medical officers of health, school principals, and teachers without whose coöperation the work would have been impossible.

REFERENCES

Board of Education (1938) Report of Committee of Inquiry into Problems relating to Children with Defective Hearing, London.

Gardner, W. H. (1938) *J. Iowa St. med. Soc.* **28**, 98.

Kerridge, P. M. T. (1937) *Spec. Rep. Ser. med. Res. Coun.* No. 221.

Mellanby, E. (1938) *J. Physiol.* **94**, 380.

HERNIA THROUGH THE FORAMEN OF WINSLOW

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HERNIA through the foramen of Winslow is rare—possibly the rarest type of internal hernia.

Ullman (1924) collected 29 cases from the literature and added one of his own. Dewis and Miller (1927), in reporting a case, drew attention to those recorded by Corry and by Copenhaver (1923), but omitted from Ullman's list, and mentioned a case described by Delagenière (1924).

From both of these lists are omitted cases reported by Rawlence (1918), McKenzie and Wood (1924–25), and Carling and Smith (1925–26). Since then cases have been mentioned (without details) by Masson (1926) and described by Thévenard (1928), who besides his own case found one recorded by Mariotti (1908) and one by de Graeuve and not included in the above reports; Deaver and Burden (1929); Aigrot (1930, 1931); Blanc (1932); Kerr (1934); Langley (1935) (not operated on); Davidson (1936); and Day (1937). Further cases have been described by Foster (1925–26), Green (1927), Richter (1928), Gabrielli (1931), Russ (1932), and Pallasse and Thomasset (1936).

ÆTIOLOGY

It is unlikely that in a normal abdomen a hernia through the foramen of Winslow will occur, and Moynihan and Dobson (1906) have suggested that at least one of the following anomalies exists and acts as a predisposing factor:—

(1) A common mesentery for the whole of the intestine.

(2) Absence of secondary fusion of the ascending colon to the posterior abdominal wall.

(3) An abnormally large foramen. The normal foramen usually admits the index finger and occasionally the index and middle fingers.

(4) An abnormally long mesentery allowing undue mobility of the intestine.

Thévenard (1928) noted the presence of a well-developed hepaticocolic ligament, which he thought might direct the passage of the intestine before it herniated through the foramen, and suggested that in hernia in which reduction by traction had been over easy the strangulation might occur at this site, and that there was not really a hernia through the foramen of Winslow.

A definite exciting factor has not been found. In some of the cases reported there has been a history either of undue abdominal contraction, undue exercise, constipation, defæcation, or labour, or the attack has followed a heavy meal (Square 1886, Treves 1888, McKenzie and Wood 1924–25, and Blanc 1932). The sex-incidence—28 men to 11 women—also supports the suggestion that exertion is a factor. On the other hand, in many cases there is no history that suggests any undue muscular contraction.

Clinically, cases may be divided into (1) the commoner acute group and (2) a less common group, in which the hernia exists without symptoms or accompanied by symptoms of vague digestive disturbance only—a sense of epigastric discomfort, fullness, and weight. According to Case and Upson (1926) the latter group can be diagnosed by radiography, and they have laid down as a diagnostic criterion the identification of the small intestine anterior to the hepatic flexure or first part of the transverse colon.

Jackson (1930) has described such a case, in which he made the diagnosis from the X-ray findings. At operation the small intestine was found in the main peritoneal cavity; but, since the foramen of Winslow admitted three fingers, Jackson considered his case authentic. There can be no doubt, however, that such a group of a developed hernia without gross symptoms exists. Thus Dewis and Miller (1927) in their case considered the history before the acute onset suggestive of this, and Langley (1935), who described a case of double intestinal obstruction, concluded that the hernia through the foramen of Winslow was of long duration and that strangulation had developed secondary to the distension following a stricture in the sigmoid. Schwalbe (1904), quoted by Ullman (1924), described a post-mortem on a woman dying of parenchymatous nephritis and aortic and mitral insufficiency, in whom the small intestine had passed through the foramen of Winslow into the lesser sac without strangulation.

SYMPTOMS AND SIGNS

In the acute group the symptoms are severe. Pain is an outstanding feature and is usually felt in the epigastrium or the right hypochondrium, but it may be diffuse and may be felt in the right iliac fossa. The pain is severe, comes on suddenly, and doubles the patient up. The suddenness of onset and the severity of the pain vary, however, and in some cases the onset is more gradual. Vomiting usually comes on with the pain and is reflex in origin. As a rule it persists, but in two cases the vomiting did not begin till the second or third day of the illness, and in McKenzie and Wood's (1924–25) case it was absent throughout, despite the fact that the strangulated bowel was jejunum. There is usually absolute constipation both for fæces and flatus. In a few cases this absolute constipation has been late in onset or incomplete, especially when the large bowel has been involved, and operation has been delayed because of the absence of vomiting and because of the positive response to enemata, as in my case. In Dewis and Miller's (1927) case the patient was constipated for three days and then had diarrhœa. It is evident, if it be granted that the hernia may be spontaneously reduced, that this may happen to some extent during an attack, with consequent abatement of the vomiting, with passage of flatus, and with relief of pain. The variability of the severity, suddenness of onset, and progress of symptoms indicates in some cases the onset of obstruction before strangulation, which is brought about by the kink produced by the weight of the obstructed bowel, whereas in others the strangulation takes place immediately the hernia is formed.

The physical signs accord with the symptoms. In some cases an epigastric or peri-umbilical swelling appears, which may be resonant or dull on percussion. The abdomen becomes generally distended, although the maximal distension may be in the upper abdomen with flattening in the iliac fossæ. There is epigastric tenderness and perhaps a sense of resistance or even rigidity.

DIAGNOSIS

The diagnosis is usually one of acute intestinal obstruction, although occasionally it is that of a perforated peptic ulcer. At operation it has not always been possible to diagnose the site of obstruction, and in some cases drainage through the gastro-hepatic omentum of an underlying swelling, or an enterotomy, or a lateral anastomosis has been done without discovering the cause. The small intestine is contained in the hernia twice as often as the large. The site of strangulation is at the margins of the foramen of Winslow. In Blandin's (1834) case (quoted

by Ullman 1924) the strangulation was produced by the margins of a hole in the transverse mesocolon, through which the bowel, having passed through the foramen of Winslow, emerged secondarily. The strangulated bowel has burst through the gastrohepatic omentum and has been found lying in front of the stomach (Schmilinsky 1919, Copenhaver 1923, and Carling and Smith 1925–26). In the other cases a swelling has been evident occupying the lesser sac, and this may be visible through the lesser omentum, or the stomach may appear to ride on a swelling situated deep to it. The presence of bowel in the lesser sac does not necessarily indicate a hernia through the foramen of Winslow; the hernia may be, for example, through a rent in the transverse mesocolon (Short 1924–25, and Heaney and Simpson 1925–26).

TREATMENT

The treatment advocated may be summarised as follows:—

(1) Simple traction, aided preferably by pressure on the swelling in the lesser sac.

(2) Preliminary enterotomies to lessen the distension and traction.

(3) Traction after dilatation of the foramen of Winslow. Dilatation must be gentle and is unlikely to help much, having in mind the boundaries of the foramen. It helped in the reduction in Sinclair's (1909) case and in Engstad's (1919), in which the peritoneum round the margin was also torn.

If the above fail, then either of the two following operations may be done:—

(4) Opening of the lesser sac through the lesser or greater omentum or transverse mesocolon—the latter is said to be safest (Ullman 1924)—and reducing the bowel with or without preliminary enterotomy to empty it and so facilitate traction. If necessary, resection could be done here.

(5) Reduction after *débridement* of the orifice as suggested by Jeanbrau and Riche (1906). Braner (quoted by Ullman 1924) found that the space to be opened up, the "interporto-choledochous" space, retroduodenal in site, was non-existent in a number of cadavers and in half the cases examined was crossed by blood-vessels. Although theoretically possible of accomplishment, in the presence of acute obstruction and in an ill patient it would seem to be impracticable. Neither this, nor the alternative suggestion of mobilising the second part of the duodenum, has ever been practised in the living.

If reduction is impossible by any of the above methods, an enterotomy or lateral anastomosis may save life. In the case recorded by Dewis and Miller (1927) the diagnosis was not made and the lesser sac was drained only. This patient lived 31 days and at necropsy it was found that the whole of the small intestine, except the proximal 120 cm. and the distal 90 cm., was strangulated, and that death was due partly to lack of nourishment and partly to toxic absorption from a large infected cavity between the abdominal wall and the peritoneum.

Of the 44 cases whose records are accessible to me 33 were submitted to operation, with 15 recoveries. The case here recorded adds a male patient who died after operation.

CASE-RECORD

The patient, a warehouseman aged 47, was suddenly struck at 11 A.M. on Sept. 17, 1938, with acute intermittent pain in the epigastrium and the umbilical region, the latter pain radiating upwards. The pain was colicky and associated with vomiting. His pulse-rate was 156 and his temperature 97° F. at the onset of the attack.

He was put to bed, and his pulse-rate dropped to 65. The pain gradually eased off, and by 3 P.M. only a dull ache remained. His bowels had been opened that day. He vomited again in the afternoon. On examination the epigastrium was tender and rigid, the rest of the abdomen being normal. Apart from some vague gastric trouble some years ago his history was uneventful.

A diagnosis of biliary colic was made. During the next twenty-four hours his temperature rose gradually to 100° F. and his pulse-rate varied between 90 and 100. His temperature then returned to normal, with the pulse-rate at about 95.

I saw him first on the evening of the 19th. He had not vomited and had only a general ache in his abdomen. He had been treated with fluids, and his bowels had been opened with enemata. His tongue was moist and furred and his face slightly sunken. His abdomen was diffusely distended and resonant, and there was some tenderness below and to the right of the umbilicus. There was no tenderness on rectal examination. He had evidently a subacute obstruction, but the absence of vomiting and the positive response to enemata, with subsequent slight diminution of the distension, led me to think that the obstruction was incomplete and possibly due to a mild plastic peritonitis secondary to a leaking ulcer.

No untoward symptoms, apart from a maintained pulse-rate of 90–95, arose till early on the 22nd. His pulse-rate had risen to 100–105, he began to feel sick, and during the course of the day he vomited slightly. His distension had become worse, causing increased discomfort, and he had passed no flatus for twenty-four hours—the response to an enema given late on the 21st being poor.

Operation (Sept. 22).—Under spinal anæsthesia the abdomen was opened through a right paramedian incision, a stomach-tube having been passed to empty the stomach. The small intestines were acutely distended, and there was no peritonitis or pelvic lesion. No collapsed bowel could be demonstrated, and evisceration was not attempted in view of the patient's condition.

The incision was extended upwards, for the bowel seemed to be tacked down in the region of the right hypochondrium rather than elsewhere. There was also a feeling of fullness and an ill-defined swelling behind the stomach; these findings suggested a hernia through the foramen of Winslow.

An enterostomy was done. This helped to empty the bowel somewhat, and the cæcum and ascending colon could be palpated—they were collapsed. On passing my hand towards the foramen I found collapsed small intestine issuing from the foramen and distended bowel entering it. The index and middle fingers passed into the foramen with ease, and attempts were made by traction and lifting the intestine to reduce the strangulated loop. This was not at first successful, except for delivering about 2 in. of bowel; but, since the ring appeared not to be constricted round the intestine, the attempt was persisted in and was successful after the bowel in the immediate neighbourhood had been further emptied. The loop consisted of about 2 ft. of ileum, which, being apparently non-viable, was rapidly resected, and a lateral anastomosis was performed. Intravenous glucose was given during the operation and continued on the patient's return to the ward, but he collapsed and died some hours afterwards. The resected ileum was about 3 ft. away from the ileo-cæcal valve. The foramen of Winslow was obviously enlarged, admitting two fingers together with the distended bowel. Because of the poor condition of the patient, no other abnormality was looked for or noted.

SUMMARY

Previously reported cases of hernia through the foramen of Winslow are reviewed and the ætiology, signs and symptoms, diagnosis, and treatment discussed. A fatal case is described in which part of the small intestine had herniated through the foramen and become strangulated.

References at foot of next page

CLINICAL NOTES

INDUCTION OF ABORTION IN THE COW

BY INUNCTION WITH STILBŒSTROL DIPROPIONATE

BY S. J. FOLLEY, M.Sc., Ph.D. Manc.

AND

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IT has been known for some years that injections of natural œstrogens will interrupt pregnancy in the rat and mouse. Recently Parkes, Dodds, and Noble (1938) have shown that oral administration of the synthetic œstrogen, stilbœstrol, will inhibit implantation of the ovum in the rat and rabbit, and that ethinyl œstradiol by mouth will terminate pregnancy in the rabbit at 9–14 days *post coitum*. In view of the possible application of these results to women, experiments in the same field on species other than laboratory rodents and with other methods of administration are of obvious interest. The observations on cows recorded below were obtained in the course of an experiment on lactation.

Two groups of four British Friesian cows were used, all animals being both pregnant and in lactation. In each group two animals were in advanced pregnancy and two in earlier stages (see table).

MR. SILVERSTONE: REFERENCES

Aigrot, G. (1930) *Lyon Chir.* **27**, 675.
Blanc, H. (1932) *Bull. Soc. Chirurgiens Paris*, **24**, 66.
Blandin, P. F. (1834) Traité d'anatomie topographique, 2nd ed., Paris, p. 467; quoted by Ullman (1924).
Braner, S., quoted by Ullman (1924).
Carling, E. R., and Smith, A. T. (1925–26) *Brit. J. Surg.* **13**, 585.
Case, J. T., and Upson, W. O. (1926) *J. Amer. med. Ass.* **87**, 891.
Copenhaver, N. H. (1923) *Proc. Mayo Clin.* **15**, 322.
Corry (1917) *Indian med. Gaz.* **52**, 130; quoted by Dewis and Miller (1927).
Davidson, J. K. (1936) *Aust. N.Z. J. Surg.* **5**, 311.
Day, R. S. (1937) *Med. J. Aust.* **1**, 633.
Deaver, J. B., and Burden, V. G. (1929) *Surg. Clin. N. Amer.* **9**, 1013.
Dewis, J. W., and Miller, R. H. (1927) *Surg. Gynec. Obstet.* **45**, 95
Engstad, J. E. (1919) *J. Amer. med. Ass.* **72**, 411.
Heaney, F. J. S., and Simpson, G. C. E. (1925–26) *Brit. J. Surg.* **13**, 387.
Jackson, B. H. (1930) *Amer. J. Surg.* **8**, 1065.
Jeanbrau, E., and Riche, V. (1906) *Rev. Chir., Paris*, **33**, 618.
Kerr, R. A. (1934) *Lancet*, **1**, 454.
Langley, G. F. (1935) *Brit. J. Surg.* **23**, 119.
McKenzie, W. G., and Wood, D. (1924–25) *Ibid*, **12**, 613.
Masson, J. C. (1926) *J. Amer. med. Ass.* **87**, 897.
Moynihan, B. G. A., and Dobson, J. F. (1906) Retroperitoneal Hernia, 2nd ed., London.
Rawlence, H. E. (1918) *J. R. Army med. Cps*, **30**, 332.
Schmilinsky, Herr (1919) *Deut. med. Wschr.* **45**, 477.
Schwalbe, E. (1904) *Virchows Arch.* **177**, 561; quoted by Ullman (1924).
Short, A. R. (1924–25) *Brit. J. Surg.* **12**, 456.
Sinclair, T. (1909) *Brit. med. J.* **1**, 646.
Square, J. E. (1886) *Ibid*, **1**, 1163.
Thévenard, (1928) *Bull. Soc. Chirurgie Paris*, **20**, 462.
Treves, F. (1888) *Lancet*, **2**, 701.
Ullman A. (1924) *Surg. Gynec. Obstet.* **38**, 225.

LITERATURE NOT CONSULTED

Aigrot, G. (1931) *Bull. Soc. nat. Chir.* **57**, 554.
Delagenière, H. (1924) *Ibid*, **50**, 552.
Foster, M. E. (1925–26) *J. Ark. med. Soc.* **22**, 64.
Gabrielli, S. (1931) *Rif. med.* **47**, 684.
de Graeuve, *J. Chir., Brux.* **11**, Nos. 5, 6; quoted by Thévenard (1928).
Green, E. K. (1927) *Minn. Med.* **10**, 451.
Mariotti, G. (1908) *Rif. med.* **24**, 963; quoted by Thévenard (1928).
Pallasse and Thomasset (1936) *Lyon méd.* **158**, 605.
Richter, S. (1928) *Uppsala LäkFören. Förh.* **34**, 303.
Ruse, W. B. (1932) *Tex. St. J. Med.* **28**, 384.

Since no satisfactory endocrinological pregnancy test has been devised for cows, pregnancy is presumed on the basis of physical examination coupled with the absence of œstrus after service. Such criteria are not always reliable in the early stages, but in advanced pregnancy there can be little doubt.

STAGE OF PREGNANCY* REACHED BY COWS AT TIME OF LAST INUNCTION

Experimental		Control	
Cow	Days pregnant	Cow	Days pregnant
L	184	P24	202
P13	162	S	158
P23	101	P	114
R	54	W	111

* The gestation period in the cow is approximately 280 days.

Stilbœstrol dipropionate was administered by inunction of the udder with an ointment (lard and olive-oil base). The control animals received similar treatment with ointment containing no œstrogen. The experiment began with five inunctions, each with 5 g. of 1 per cent. ointment, evenly spread over 15 days, followed over the next 14 days by six spaced inunctions, each with 10 g. of the same ointment, and concluded with two inunctions spaced over five days, each with 10 g. of 2 per cent. ointment. The total amount of stilbœstrol dipropionate applied to each cow therefore amounted to 1·25 g. or, since the cows each weighed about 1200 lb., approximately 2·4 mg. per kg.

Both of the experimental cows in more advanced pregnancy (L and P13) delivered dead fœtuses on the day following the last inunction—i.e., at 185 and 163 days respectively. With regard to one of the other two œstrogen-treated animals the results are not so clear-cut. Cow P23 was observed to be in œstrus 45 days after the last inunction, which, assuming that she really was pregnant at the time of the experiment (pregnancy was indicated by the two above-mentioned criteria), would mean that the treatment had terminated pregnancy in her case too. Against this are the facts that no fœtus from her was found and no physical signs of a recent abortion observed, and that cows have occasionally been known to come into œstrus in mid-pregnancy. The remaining cow, R, has not been observed in œstrus since the treatment, and there is no doubt that she is still pregnant. The possibility that the abortions were caused by some dietary factor, such as ergot, is excluded because no interference with pregnancy was observed in any of the control animals. Contagious abortion is also ruled out, because tests for *Brucella abortus* in the fœtuses by culture and guineapig inoculation, and in the blood of the dams by agglutination, were negative.

It is of considerable interest that in the cow administration of large doses of œstrogen should lead to termination of pregnancy in its later stages, particularly in view of the fact that in advanced pregnancy the cow excretes considerable amounts of œstrogen (Nibler and Turner 1929, Barrie, Patterson, and Underhill 1935). Indeed, our results suggest that the cow is more sensitive to this action of œstrogen in the later stages of gestation than earlier, which is perhaps somewhat unexpected in view of the rise in œstrogen excretion during pregnancy. This last conclusion is, however, subject to some uncertainty owing to the difficulty of making a precise diagnosis of pregnancy in its earlier stages in this species. Women also excrete large amounts of œstrogen during pregnancy, and it is therefore possible that in women the

administration of œstrogen might have a similar effect during most of the period of gestation.

A further point of interest attached to these experiments is the undoubted efficiency of inunction as a method of administration of stilbœstrol dipropionate.

We are indebted to Prof. R. Rae and Mr. K. W. D. Campbell, of the Reading University Farm, for valuable coöperation and to Dr. A. T. R. Mattick and Dr. P. M. F. Shattock for bacteriological examination for *Brucella abortus*. The stilbœstrol dipropionate was generously given by Dr. F. L. Pyman, F.R.S., and Dr. W. F. Short, of Messrs. Boots Pure Drug Co. Ltd.

REFERENCES

Barrie, M. M. O., Patterson, J. B. E., and Underhill, S. W. F. (1935) *Quart. J. Pharm. Pharmacol.* **8**, 424.
Nibler, C. W., and Turner, C. W. (1929) *J. Dairy Sci.* **12**, 491.
Parkes, A. S., Dodds, E. C., and Noble, R. L. (1938) *Brit. med. J.* **2**, 557.

ACROMIOCLAVICULAR DISLOCATIONS AND FRACTURES OF THE CLAVICLE

A SIMPLE METHOD OF SUPPORT

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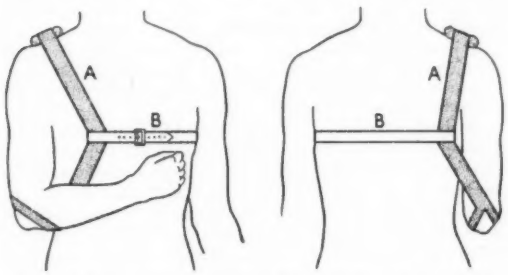
ALL the uncomplicated methods of treating acromioclavicular dislocations and fractures at the outer end of the clavicle aim at depressing the outer end of the clavicle and lifting the arm to restore the apposition of the clavicle and acromion. This is usually achieved by passing adhesive strapping over a pad on the shoulder and underneath the elbow. This method tends to be unsatisfactory in that the tension of the strapping diminishes fairly quickly and frequent reapplications are necessary. If a non-adhesive material is used, it slips off the shoulder very easily. Furthermore, in the tropics, to leave adhesive strapping stuck to the skin for any length of time is contra-indicated owing to the readiness with which sepsis and necrosis of the skin take place beneath the strapping.

The method to be described has been found to be extremely simple in operation and very effective in producing the required depression of the clavicle and elevation of the arm. Loop A (see figure) can be



Support for acromioclavicular dislocations and fractures of the clavicle: A, B, see text.

made of some material such as heavy linen and should be 2–3 in. wide. At one point a 6-in. longitudinal slit should be made. B is a webbing strap fitted with an adjustable buckle, behind which is a flap to protect the skin. Reference to the diagrams will make the method of application self-explanatory. Loop A passes over a pad on the shoulder, and the point of the elbow rests in the longitudinal slit. Strap B is taken round the chest and passed round loop A in front and behind. Tightening this strap results in a pull downwards on the shoulder and upwards on the elbow. It is obvious that the tighter the strap is made, the greater will be the force exerted on the shoulder. The wrist is supported by a narrow sling round the neck.

It will be found, by judicious arrangement of the length of the loop and by fixing the points of attachment of the strap, that the shoulder can also be braced backwards, thus making the apparatus suitable for treating other fractures of the clavicle.

As a first-aid measure, ordinary bandages can be used satisfactorily.

New Inventions

A USEFUL ENTEROTOME

THE enterotome I have been using for some time has in my opinion several real advantages over the many other forms. In the treatment of carcinoma of the pelvic colon Paul Mikulicz's operation gives excellent results and the mortality is low. In this operation the growth is brought outside the abdomen

FIG. 1

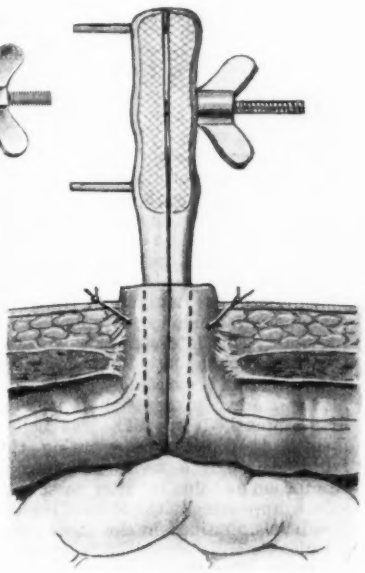


FIG. 2

and excised, the two loops of bowel being joined together and fixed to the abdominal wall. The enterotome used should be simple in action and give even pressure on the two loops of bowel. In the one that has been made for me by Messrs. Vann Brothers of London, the two blades lie parallel with each other and are controlled by a thumb-screw (fig. 1). The instrument is small and can be easily incorporated in gauze over the openings in the bowel. Fig. 2 shows the enterotome in situ, crushing the spur formed between the two loops of sigmoid colon.

CECIL P. G. WAKELEY, F.R.C.S.

REVIEWS AND NOTICES OF BOOKS

Anemia in Practice

Pernicious Anemia. By WILLIAM P. MURPHY, A.B., M.D., associate in medicine, Harvard Medical School; consultant hematologist, Melrose Hospital, Melrose, Mass. London: W. B. Saunders Co. 1939. Pp. 344. 22*s.* 6*d.*

Principles of Hematology

By RUSSELL L. HADEN, M.A., M.D., chief of the medical division of the Cleveland Clinic, Cleveland, Ohio; formerly professor of experimental medicine in the University of Kansas school of medicine. London: Henry Kimpton. 1939. Pp. 348. 21*s.*

Recent Advances in Hæmatology

(4th ed.) By A. PINEY, M.D. Birm., M.R.C.P., assistant physician to St. Mary's Hospital for Women and Children, London. London: J. and A. Churchill. 1939. Pp. 312. 15*s.*

THERE have been a succession of textbooks on hæmatology in the last few years which have presented in different words the facts set out by their predecessors. But hæmatology did not come to a standstill with the discovery of the liver treatment of pernicious anæmia and of the part played by dietetics and conditioned deficiencies in hæmopoiesis. Important work on hæmoglobin metabolism has since been done in Germany by Heilmeyer and is still being done in both America and England. A knowledge of the mechanism of hæmoglobin breakdown is essential to an understanding of hæmolytic anæmia, and the new views on pigment balance necessitate a revision of many accepted ideas. Yet no textbook available makes any mention of the advances made along these lines. These three books are no exception: on certain aspects of modern hæmatology they are completely out of date.

Dr. Murphy's work is in fact a monograph on the diagnosis and treatment of pernicious anæmia with a few brief chapters on other types of anæmia, technical laboratory procedures and transfusion. He has investigated and treated 578 patients with pernicious anæmia and his analysis of the geographical, racial, sex- and age-incidence, complications and prognosis is inevitably of interest. He agrees that provided treatment is adequate and there are no complications the prognosis is extremely good.

Dr. Haden presents his principles in a novel diagrammatic form. The red cells are seen being formed in a tank representing the bone-marrow, falling through a series of pipes representing the circulation and finally, after passing through liver and spleen, appearing in the form of iron and bile-pigment. The levels obtained in the three stages of formation, circulation and destruction vary in different types of anæmia. The letterpress is throughout extremely decisive and the student who reads the book will never know that certain facts are still obscure. For instance, vitamin C is stated to be the cementing substance by which the endothelial cells are held together. The leukæmias are simply classified as myeloid, lymphocytic and monocytic, no mention being made of the obscure and difficult group often discussed under the ill-defined term "reticuloses." Dr. Haden places special emphasis on the technique of examination as he believes that clinical interpretations necessarily depend on accurate and complete laboratory data. He illustrates his points with 168 original photomicrographs, and his book has the merit of presenting old facts in a new guise.

Recent Advances in Hæmatology describes the same facts in a more orthodox fashion. Only a few pages of the older editions have been incorporated, the whole of the rest having been rewritten. Modern views of the origin and development of the blood-cells are discussed in the first chapter; this is followed by chapters on symptomatic blood changes, the different types of anæmia, the leukæmias and the erythræmias. Dr. Piney seems to make no attempt to bridge the gap between the leukæmias and diseases affecting the reticuloendothelium, hæmorrhagic diseases—hypoplastic and aplastic states of the blood-forming organs—being placed between the two. Apart from a few surprising statements, for instance, that achlorhydria or hypochlorhydria are invariable in so-called idiopathic hypochromic anæmia, this book gives an adequate summary of orthodox textbook hæmatology.

Micro-Diffusion Analysis and Volumetric Error

By E. J. CONWAY, M.B., D.Sc., N.U.I., professor of biochemistry, University College, Dublin. London: Crosby, Lockwood and Son. 1939. Pp. 306. 25*s.*

FEW things have contributed more to the recent advancement of medical science than the introduction of micro-chemical methods of analysis. Micro-methods for blood-sugar, blood-urea and so on, unknown a few years ago but already taken as a matter of course, have brought about a revolution in clinical investigation and every new method puts a new weapon in the clinician's hands. Prof. Conway is a pioneer in micro-chemical methods and this book describes in critical manner the techniques of using micro-pipettes, micro-burettes and other micro-analytical apparatus including the Conway micro-diffusion unit. The Conway unit is already in use in many hospital laboratories for ammonia, urea and micro-Kjeldahl determinations. Further applications of this useful and labour-saving device are now given for determining blood adenylic acid, adenyl pyrophosphate, adenosine, volatile amines, halogens and blood carbon dioxide (as a method of estimating "alkali reserve" and blood pH). The accuracy of these methods has been worked out in great detail and the book contains a valuable series of chapters on estimating such factors as the chemical error and the variable glass error in microchemical titrations. This is a book that will be welcomed in every progressive laboratory.

Life's Beginning on Earth

By R. BEUTNER, M.D., Ph.D., professor of pharmacology at the Hahnemann Medical College and Hospital of Philadelphia. London: Chapman and Hall. 1939. Pp. 222. 12*s.* 6*d.*

THE apparent rift between living and non-living matter is so vast that to speculate on the origin of the one from the other has never been considered by biologists as anything but an idle recreation. In recent years, however, discoveries have been made which enable speculation to take a rather less nebulous form, though we are not necessarily approaching nearer to the truth. The discovery of the crystalline nature of some viruses and of the crystal properties of several constituents of living matter has certainly opened up a suggestive field. Certain viruses at least are apparently pure substances, but, like living matter, they can increase their substance from surrounding materials by a kind of enzyme action. We seem here to be confronting the borderline or perhaps a stage in the gradual transition between non-living and living matter. Most of Prof. Beutner's book is made

up of descriptions of experiments whereby non-living substances can be made to imitate various aspects (mainly external forms) of living organisms. Many of these, such as the imitation of growing plant structures by osmotic swelling, are spectacular, but there is no evidence that any of them can throw light on the living phenomena which they imitate. Curiously enough, he does not discuss the origin of the supreme characteristic of living matter, its organisation, at all. This is admittedly the most difficult of all problems, but since Prof. Beutner is not afraid of speculating he might have been expected to suggest, as others have done, a possible connexion between the organised structure of liquid crystals in a homogeneous fluid and that of protoplasm.

An Introduction to Dermatology

(10th ed.) By NORMAN WALKER, Kt., M.D. Edin., LL.D., F.R.C.P.E., consulting physician to the Royal Infirmary, Edinburgh; and G. H. PERCIVAL, M.D., Ph.D. Edin., F.R.C.P.E., physician for diseases of the skin to the Infirmary. Edinburgh: W. Green and Son. 1939. Pp. 391. 20*s*.

IN its forty years of life Sir Norman Walker's introduction has become one of the classics of dermatology. In the new edition he has been assisted by Dr. G. H. Percival, and while the work retains its original characteristics, notably its readableness and its method of presentation, it has been brought thoroughly up to date.

Traité de thérapeutic clinique

(2nd ed.) By PAUL SAVY, professeur de clinique médicale à l'université de Lyon. Paris: Masson et Cie. 3 volumes. Pp. 2776. Frs.450.

THIS work has the balance and thoroughness which only the care of one man can give. Its plan is sound. General considerations of each disease or symptom, with the pathological and anatomical basis, are first discussed; the therapeutics logically follow, though M. Savy is too experienced a clinician to scorn the empirical. All but the most recent therapeutic advances are included and the scope is international though references to the authors quoted would have given even greater authority. The description of the evolution of the various therapeutic methods in the history of medicine and the quotations from the old masters are delightful. The style is clear and the French easy to read. Well-known facts gain new significance and the forgotten principle is politely reimpressed by the French language, which has the power of transforming the dullest platitude into an eternal verity. This is a work both to consult and enjoy.

The Vaginal Diaphragm

Its Fitting and Use in Contraceptive Technique. By LE MON CLARK, M.S., M.D., Chicago. London: Henry Kimpton. 1939. Pp. 107. 9*s*.

THIS is an excellent monograph, liberally illustrated. Dr. Le Mon Clark of Chicago knows his subject inside out but is no fanatic; he has wide sympathy with the patient and the advice he offers is full of good sense. He has no great use for the more fancy types of diaphragm cap such as the Matrisalus, and confines himself to a description of two types of diaphragm, the one with a spirally coiled spring—e.g., the Koromex—and the ordinary Dutch or Mensinga cap with a flat watch-spring in the rim. He points out that the former spring is flexible in two planes and is therefore unsuitable for use in women with relaxed pelvic floors or cystoceles, or with long prominent cervices. The watch-spring can only be compressed laterally and cannot be bent in the other plane, and it is often effective in such cases. However, in a fair proportion of women with large cystoceles a Dumas type of cap gives the better fitting. Dr. Clark is not in favour of using the smaller sizes of diaphragm for "capping" the cervix owing to the great risk of the patient misfitting these into the anterior fornix. He advocates placing the diaphragm dome upwards. His description of the technique of insertion, both with and without an inserter, is excellent. In discussing jellies and creams to be used with the cap he takes the view, which seems to be general in America, that the spermicidal efficiency of the preparation is not of paramount importance. He talks vaguely about "bland jellies" and does not appear to grasp the fact that these products may be highly spermicidal without being irritating to the vaginal mucosa. He gives some sound advice to young couples about not delaying their first child too long.

Textbook of Neuro-Anatomy and the Sense Organs

By O. LARSELL, Ph.D., professor of anatomy, University of Oregon medical school. London: D. Appleton-Century Company. 1939. Pp. 343. 25*s*.

THIS book is intended primarily for medical students making their first survey of the anatomy of the nervous system, and it is admirably suited to this purpose. Outstanding features from the comparative anatomy of the brain are mentioned and serve to link human neuro-anatomy with zoological studies. The functional interpretation of cell masses and fibre tracts in the light of human pathology, animal experiment and comparative anatomy is also outlined. The chapters dealing with the proprioceptive apparatus and the cerebellum are particularly valuable as coming from an original worker in this field, and beginners will be helped by the figures showing the anatomical constitution of the long ascending pathways of the spinal cord.

Illustrations of Regional Anatomy

(2nd ed.) By E. B. JAMIESON, M.D., senior demonstrator and lecturer in the anatomy department of the University of Edinburgh. Edinburgh: E. and S. Livingstone. 1939. Section VI, Upper Limb (42 plates). 7*s*. 6*d*. VII, Lower Limb (52 plates). 10*s*. 6*d*.

IN these new atlases the publishers have provided six score of additional colour blocks, so that the majority of the plates now carry many colours. The result is as delightful as it is accurate. The student will rejoice, and even the senior man wishing to refresh his memory may hum a merry tune as he studies the new Jamieson.

Schafer's Essentials of Histology

(14th ed.) Edited by H. M. CARLETON, M.A., B.Sc., D.Phil. Oxfd, university lecturer on histology; research fellow of New College, Oxford. London: Longmans, Green and Co. Pp. 618. 16*s*.

THE writer of an elementary textbook of histology undertakes a difficult task, for the ideal volume—one which will help beginners to help themselves—must bring together, not only the chief agreed facts of microscopic anatomy, but also the main points which are still controversial; at the same time it must indicate the physiological significance of the structures described. Dr. Carleton has set out to satisfy all these requirements, and he has undoubtedly succeeded in fulfilling the first. But the controversial subjects should have been given more prominence, even though the book is for beginners. It is by directing their attention to regions as yet incompletely charted that

beginners are spurred to explore for themselves and to develop precision of observation and discrimination in evaluating different techniques. Dr. Carleton also misses a few opportunities of pointing out the physiological significance of the facts he gives. For example, he mentions the experimental work of Langley and Anderson, in which they demonstrated that the central end of the severed vagus nerve passes into and ends within the superior cervical ganglion of the sympathetic, but says nothing of the bearing of this finding on the question of cholinergic endings.

Synopsis of Clinical Laboratory Methods

(2nd ed.) By W. E. BRAY, B.A., M.D., professor of clinical pathology, University of Virginia; director of clinical laboratories, University of Virginia Hospital. London: Henry Kimpton. Pp. 408. 18s.

THE second edition of this book presents clearly practical directions for clinical pathology, including bacteriology, hæmatology and biochemistry. The book is intended solely for the one-man pathologist, and as such will be useful. It is popular in America.

EARLY HISTORY OF BLOOD-TRANSFUSION

IN the first issue of a new medical periodical, Dr. Cochran gives a brief outline of the history of blood-transfusion.[1] In 1661, forty-five years after Harvey's discovery of the circulation of the blood, Richard Lower,[2] a London anatomist, performed the first successful blood-transfusion, uniting with a goose-quill an artery of a dog with a vein of another dog. He repeated his experiment before the Royal Society. In 1662 Jean-Baptiste Denis, using 9 oz. of lamb's blood, performed the operation for the first time on a human being—a boy, aged 15, anæmic from repeated venesection for fever. Astonishing improvement is said to have taken place. On Nov. 23, 1664, Lower and King performed their first transfusion on a man and used sheep's blood. The operation was performed repeatedly at meetings of the Royal Society before 1671, the object being to stave off impending insanity. Lower [2] wrote that "Harvey became pre-eminent by first demonstrating that blood circulated in the vessels inside the body. That this circulation could be extended outside the body was first discovered by me." Samuel Pepys met the patient on Nov. 30, 1667, and described him as "cracked a little in his head" and "the first sound man that ever had it tried in England, and but one we hear of in France." Lower was probably also the father of intravenous therapy, for he experimentally injected into the veins of living animals "various solutions of opiates, emetics, and kindred other medicines," besides wine and beer.

Further details of the early history of blood-transfusion are available from other sources. In 1667 Denis's Letter on the Transfusion of Blood was translated into English, but suppressed by the editor of the *Philosophical Transactions*. In 1668 George Acton [3] suggested the transfusion of the blood of stags, eagles, and other long-living animals to prolong human life. In the same year Emilio Maria Manolessi published his "Relazione dell' Esperienze fatte in Inghilterra, Francia, ed Italia intorno alla . . . Trasfusione del Sangue," giving details not only of the English and French experiments but also of similar operations performed at Rome and Bologna. Blood-transfusion is also mentioned in Hermann Grube's "De Transplantatione Morborum Analysis nova" of 1674. G. A. Mercklin's "De Ortu et Occasu Transfusionis Sanguinis," published at Nuremberg in 1679, contains the earliest illustrations of blood-transfusion. The frontispiece depicts a transfusion from animal to man and two scenes of transfusion from man to man by the veins of either the arms or the hands.

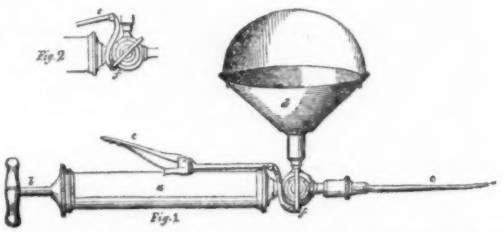


FIG. 1—The syringe with its pipe and funnel ready for use: (*a*) the cylinder; (*b*) the piston; (*c*) the pipe, the extremity of which is introduced into the vein; (*d*) the funnel; (*e*) the lever, which acting on (*f*), the stop-cock, opens or closes the communication of the syringe with the funnel or pipe as may be required.

FIG. 2—The stop-cock turned by the depression of the lever (*e*), shown in fig. 1.

The astonishing fact is that the transfusion of sheep's blood was successful in the first two cases. Subsequently, however, numerous fatalities led the Parisian court to forbid transfusions from animals to man, and in 1675 the Pope issued a special edict to ban it. Consequently the practice lay dormant for 150 years, until it was resuscitated by James Blundell (1790–1877) for post-partum hæmorrhage (see the memoir at the end of Ashwell's Practical Treatise on Parturition, London, 1828). It was he who discovered that blood from the same species was necessary for a safe transfusion. He has eleven successful transfusions to his credit. Severe reactions and occasional deaths led Prevost and Dumas in 1826 to suggest the use of defibrinated blood, but the first transfusion of such blood was done by Larsen in 1847 with an egg-beater.

In 1840, Samuel Lane,[4] lecturer on anatomy and surgery in St. George's School at Hyde Park Corner, being called in to attend to a boy, aged 11, dying from hæmorrhage after a slight operation (Dieffenbach's) for squint, consulted Blundell concerning his technique and experience of blood-transfusion and proceeded to perform it on the boy with a syringe, tube, and funnel (see figure). About 10–12 oz. of blood was taken from "a stout healthy young woman," and "in the course of an hour or two the boy sat up in his bed and drank a glass of wine and water from his own hand."

An idea of the position of blood-transfusion in surgery about half a century later can be gained from Holmes and Hulke,[5] who said: "The name of Dr. Blundell is permanently associated with the operation of transfusion." They mentioned the transfusion of other substances—e.g., milk for hæmorrhage by Wagstaffe and, in America, sheep's blood for "phthisis." They also said that "Monsieur Roussel has proposed repeated transfusion of healthy blood as a remedy in mental disorders"—a barking back to Lowell in 1664. It was recognised that, for hæmorrhage, "in great emergencies water alone may be injected." Aveling's apparatus [6] for direct transfusion was said to be simple, whereas that of Roussel [7] was complicated.

1. Cochran, G. C., jun., *Brooklyn Hosp. J.* January 1939, p. 52.
2. Lower, R., Treatise on the Heart, 1671.
3. Acton, G., Physical Reflections upon a Letter written by J. Denis to Monsieur de Montmort . . . concerning a New Way of Curing sundry Diseases by Transfusion of Blood, London, 1668.
4. Lane, S., *Lancet*, 1840–41, **1**, 185.
5. Holmes, T., and Hulke, J. W., A System of Surgery, 3rd ed., London, 1883, vol. i, p. 356.
6. *Trans. obstet. Soc.* May 4, 1874.
7. Roussel, J., Transfusion of Human Blood, London, 1877.

THE LANCET

LONDON: SATURDAY, OCTOBER 7, 1939

CHEMOTHERAPY IN PNEUMONIA

SOME of our earlier comments on the treatment of pneumonia with M. & B. 693 have seemed to some unduly optimistic, but the constant stream of reports from world-wide sources—many of them admittedly inadequate, poorly documented or statistically unsound—now tell a story of success unrivalled since the early salvarsan days. It seems, indeed, safe to predict that where "606" has saved its thousands "693" will save its tens of thousands. The very multiplicity and diversity of the reports indicate some of the drug's assets—the ease and safety of its administration, and its cheapness and availability when compared with specific antiserum. These allow clinical trials to be made in places where there is little opportunity for that close coöperation between clinician and laboratory worker which is so essential if serotherapy is to be given a fair chance, such as Lahore [1] and the Kolar gold-mines [2] in India, and in Singapore.[3] The results there are as satisfactory as those reported from the South African mines,[4] where, as in India, pneumonia takes a heavy toll of the industrialised native. Thus a therapeutic control of the disease in the gold-mining industry is likely to supplant the prophylactic method used by the late Sir SPENCER LISTER and his staff. On the home front, the latest figures from Birmingham given by GAISFORD [5] are 400 treated cases of lobar pneumonia with a fatality-rate of 6·5 per cent., the rates for the two previous years being 21 and 20 per cent., and only 5 deaths among 199 patients in the economically important age-group 20–50. The enthusiastic adoption of M. & B. 693 in the Scandinavian countries, more especially Norway, to which recent issues of *Nordisk Medicin* bear witness, is interesting because they have lately seen a drive in favour of the new antipneumococcus rabbit serum. The paper in this issue by Dr. RÖMCKE and Dr. VOGT, whose results closely parallel those from Birmingham, illustrates the value of pooling records from several centres, as was done in the report to the Therapeutic Trials Committee on the serum treatment of pneumonia five years ago. The United States, which at first adopted a critical, and almost resentful, attitude to the new drug is slowly giving it a more cordial reception. Lately CUTTS and his colleagues,[6] for example, have compared the response to serum and "sulfapyridine" in a small series, to the latter's advantage.

Chemotherapy inevitably invites comparison with serum. Besides the advantages of cheapness and convenience M. & B. 693 shows itself superior under conditions where serum gives poor results—in older patients, in advanced stages of the disease and in type III infections. The resemblance of type III pneumococcus to the streptococcus seems to be reflected in its susceptibility to the sulphonamides, for both sulphanilamide and M. & B. 693 have been effective in type III lobar pneumonia, and they have reduced the fatality-rate from some 40–50 per cent. to the region of 10 per cent. In this country type III pneumococcus pneumonia is fortunately rare, but the same cannot be said for type II infections, which in Glasgow, for instance, kill as many people as all other types together. The success of Dr. ANDERSON and his co-workers with M. & B. 693 in 70 cases of type II pneumococcus pneumonia is therefore particularly welcome. Their fatality-rate of 8·6 per cent., even allowing for a favourable age-distribution, is less than half the rate for untreated cases; this is better than serum treatment can do, at about a tenth of the cost. On the other hand, the results of chemotherapy in type I infections do not seem to be as good as with serum. In pneumonia generally, both serum and M. & B. 693 shorten the course of the illness, but the patient seems to recover more slowly after the drug; neither serum nor drug has any appreciable effect on the rate of resolution or on the incidence of empyema.

On the debit side is the toxicity of M. & B. 693. Gastric upsets in some degree are met with in 30–50 per cent. of adult patients, though they may often be allayed by omitting one or two doses of the drug, by giving the tablets crushed in milk or fruit juice, or in severer cases by injecting the soluble sodium salt intramuscularly (33 per cent. solution), intravenously (5 p.c.) or rectally (2 p.c.). Drug rashes and drug fever appear in a small proportion of cases, methæmoglobinæmia is probably more common than clinical or simple spectroscopic examination suggests, and transitory hæmaturia has been observed in as many as a third of the patients in some series. The severer complications—agranulocytosis and hæmolytic anæmia—should rarely arise in an acute and limited infection like pneumonia, for the drug is unlikely to benefit any patient who does not respond within the first two or three days of treatment.

What of the future? In the treatment of pneumonia M. & B. 693, or perhaps something even better, has come to stay; but there is still a 15–25 per cent. mortality among patients over fifty. Would drug plus serum be effective in such cases? And what of the appalling loss of life from bronchopneumonia in early childhood? Further, as Professor BROWNING pointed out at the Aberdeen meeting of the British Medical Association, there is still no certainty as to how the drug acts. Obviously much remains to be done by both clinician and experimenter.

1. Chand, A., et al., *Ind. med. Gaz.* 1939, **74**, 257.
2. Caplan, A. *Ibid*, p. 451.
3. Monteiro, E. S., *J. Malaya Br. Brit. med. Ass.* 1939, **3**, 51.
4. See *Lancet*, 1939, **1**, 359 and 380.
5. Gaisford, W. F., *Proc. R. Soc. Med.* 1939, **32**, 1070.
6. Cutts, M., et al., *New Eng. J. Med.* 1939, **221**, 263.

AEROPLANE NOISE AND DEAFNESS

THE occupational deafness of boilermakers and of workers in similar noisy surroundings has long been recognised. The noise produced by certain types of multi-engined aircraft has been measured and found to exceed that in boilermakers' shops, and engine-noise is likely to become still greater with further increases of horse-power. It has therefore become important to study the effects of these sounds on the hearing of aviators and those who test and tune their machines, and a useful preliminary survey has been made by DICKSON, EWING and LITTLER.[1]

Laboratory experiments have shown that loud tones at intensities up to 120 decibels above the normal threshold, and with frequencies between C^1 and C^4, cause temporary diminution of acuity over a range of frequencies extending from the level of the fatiguing tone to about an octave higher. Audiograms of cases of deafness in members of the Royal Air Force invariably show a bilateral loss of acuity confined to frequencies above C^3, and usually most definite in the region of C^4. Analysis, however, of the sounds emitted by aeroplanes shows that frequencies which give the highest relative loudness are invariably at the lower end of the scale; so that, in the case of aeroplane deafness, loss of acuity at the upper end of the scale is caused by vibrations of high intensity at the lower end. This loss at the upper end of the scale results in an inability to recognise consonants; these patients are therefore liable to make mistakes in hearing speech, but as their hearing over the rest of the scale is unimpaired they are not always aware of their deafness. The deafness is probably progressive as long as the patient continues in his noisy occupation, and aviators' deafness must be considered to threaten a serious and lifelong disability.

Good insulation for sounds of low frequency is particularly difficult to obtain. V. F. LAMBERT, who collaborated with Wing-Commander DICKSON and his colleagues in examining various methods of protecting the ears, remarks that finding a method of completely occluding the meatus seemed on first consideration to be quite simple, but in practice this was not the case. The rigid bony meatus should be easy to occlude, but unfortunately it is very sensitive and intolerant. The cartilaginous meatus is more tolerant, but it is mobile and the movements of the jaw are readily transmitted to it. The substance to be used as a plug must be soft enough to mould into position and to fit snugly despite the movements of the jaw. LAMBERT found dental stent too hard to fit tightly during the jaw movements; neither Plasticine nor a heavy fluid in a soft rubber container proved suitable, but a plug of cotton-wool smeared with Vaseline was quickly and safely applied and efficient. He says that the usual flying helmet, firmly strapped so that the telephones and their holders closely seal the ears, gives good protection, and this is confirmed by audiograms of three pilots with many hours' flying to their credit, who wore helmets and showed no deafness. Protection of the ears appears to diminish, if not to eliminate, the risk of impairment of auditory acuity, and seeing that there is a real danger of permanent deafness if this precaution is neglected, steps should be taken to ensure that all pilots while flying and mechanics while tuning engines use either an effective ear plug or a carefully fitted helmet.

1. Dickson, E. D. D., Ewing, A. W. G., and Littler, T. S., *J. Laryng.* September, 1939, p. 531.

TREATMENT FOR BED-WETTING

SOME of our country towns have lately come to have a Continental look; for every morning every window is filled with bedding hung out to air in the sunshine. The scene is cheerful, but the householders are depressed; for the habit of bed-wetting, in guests who are likely to stay a long time, is a serious tax on hospitality, especially where the hosts have no large reserve of bed-linen. Somewhat unexpectedly, enuresis has proved to be one of the major menaces to the comfortable disposition of evacuated urban children; and, though it should diminish as the children begin to feel themselves at home, its very existence defers this domestication. It alienates affection which may be the child's main need. Hence even the most superficial treatment will be legitimate if it breaks the vicious circle by removing the symptom, and at a time of widespread domestic crisis we make no apology for offering a few dogmatic opinions and recalling some of the traditional remedies.

If a child over three years old cannot hold his water, the child and the water should be examined. After such general disorders as mental defect and hypothyroidism have been excluded, a search should be made for irritable foci in the genitalia, particularly balanitis, vulvitis, and meatal ulceration. Urinary examination is important chiefly for the discovery of pyuria—a common cause, or clue to the cause, of acquired enuresis—and a drop of uncentrifuged urine should therefore be looked at under the microscope. In the absence of pus and sugar it may be discovered that the urine is abnormally acid or alkaline, and potassium citrate or acid sodium phosphate may be accordingly prescribed; which if it does no good will at least do no harm. As a rule, the result of these investigations will be nothing more than the conclusion that one has to deal with functional enuresis. When this decision has been made there is much to be said for turning the patient over to a pædiatric psychotherapist; but such an one is not to be found in every hedgerow, and in his absence good results can often be got by simple means. Dr. HECTOR CAMERON has said that "functional enuresis may be cured by anyone who is confident of his own powers to achieve success and who can communicate that confidence to the child." The parent, however, must be made to share the doctor's confidence and must be additionally assiduous; so it is to be hoped that foster-parents will be less likely than indulgent mothers to resign themselves to the child's "weak bladder," or to his being "too small" or "too delicate" to be trained. If the parent or guardian believes that (in Mr. CHURCHILL'S inspiring phrase) "we have only to persevere to conquer," she will communicate her belief. She

will see also that the child has no fluids to drink after five o'clock, that he empties his bladder before he gets into bed, and that he is roused to void completely again at a later hour; she will take the trouble to discover whether fear of the dark prevents him from getting up at night, and will provide a night-light if necessary; and finally she will abjure unkindness. For enuresis, though sometimes a conscious, is rarely a voluntary act, and punishment is out of place. The Star Chamber methods of yesterday have given way to the "star chart," a weekly or monthly calendar on which the child fixes an adhesive gold star (or merely a red cross) in celebration of every dry night. This is often a great help to children who are intelligent and keen to be cured; they (not the parent) should mark the chart, and the emphasis, as will be seen, is on success, not on failure.

Many patients will be much improved or cured by these simple methods. Some however need drugs, of which many have been tried and recommended. The success of these may be guessed from their number, but the fact remains that few cases are resistant to continued treatment with ephedrine and atropine in really adequate doses. Ephedrine sulphate is given at bed-time, gr. $\frac{1}{4}$ to a child of three to six years, and gr. $\frac{1}{2}$ to an older child; it is explained that this may not be a big enough dose, and that more may be given if it is ineffective. If after a week's trial there is no improvement, the younger child's dose is increased by gr. $\frac{1}{4}$ and the older by gr. $\frac{1}{2}$. This can be repeated until 2 or 3 grains are being taken (by the older child) or until enuresis ceases. The highest dose that is reached is maintained for a fortnight and then stopped; if enuresis recurs it may be repeated. Occasionally restlessness, vomiting, or headache indicate that the dose should be reduced, but success is usually attained without toxic symptoms. Tincture of belladonna is useful, particularly in cases where the child is under close observation and its administration can be pushed until it produces a dry mouth or dilated pupils. It is given in amounts of 10 minims for the younger child, and 15 minims for the older, half an hour before bed-time. The dose is increased weekly by 5 minims until enuresis stops, or until symptoms appear. Some physicians advise giving belladonna during the day too, in rather smaller doses.

SIGNIFICANCE OF THE GIANT CELL

On another page Professor HADFIELD describes a condition of regional ileitis which shows under the microscope the picture of lymphadenoid hyperplasia with non-caseating giant-cell systems in the submucosa and the regional lymph-nodes. Scattered irregularly in the reacting lymphadenoid tissue are a number of germinal centres consisting of proliferating endothelial cells with weakly staining nuclei and containing one or more giant cells of the Langhans type. At first sight the histologist would say miliary tuberculosis, but there was no evidence of caseation, necrosis or gross destruction of surrounding tissues, and Hadfield failed to find tubercle bacilli. The spontaneous retrogression and inconspicuous healing of the centres reminds him of Boeck's sarcoidosis, a disease which has long puzzled pathologists. The giant cell is a plaguy fellow, and there is no knowing what he will do, even in proved tuberculosis, and especially in lesions of lymphadenoid tissue. Using vital staining methods, Doan, Sabin and Fortenes have classified[1] the giant cells seen in tuberculosis into two groups: those which they call the epithelioid giant cells, with a uniform amitotic division and a rosette of fine vacuoles; and foreign-body giant cells, varying widely in size and structure and with no constant cytological pattern. Vital staining methods are not open to the clinical pathologist who studies the tuberculous lesions of man, but it is fairly certain that the Langhans type fits into the first group of the Doan-Sabin-Fortenes classification. This cell is associated with epithelioid proliferation—in fact, the epithelioid cells are its precursor—and is regarded as the true tuberculosis giant cell. Looked at thus, the giant cell of Hadfield's regional ileitis may fairly be regarded as the genuine article—it is of Langhans type and is associated with epithelioid proliferation. Shall the facts that no tubercle bacilli have been found and that no caseation follows put it out of court? Actually the histological picture so clearly described by Professor Hadfield resembles closely the lesion produced by the inoculation of dead tubercle bacilli into animal tissues. Doan, Sabin and Fortenes found that only certain portions of the lipoid fraction of the tubercle bacillus produce the epithelioid giant cell. It is by no means impossible that regional ileitis may owe its features to the passage of dead bacilli or their products from the intestinal tract into the submucosa and lymphadenoid tissue.

WOMEN DOCTORS IN THE ARMY

ON Sept. 16 we suggested that the conditions of employment of women in the Services should be clearly defined and not left in the state of vague uncertainty from which they suffered in the last war. We are glad to note that the Army Council has now published[2] a scheme for women medical officers attached to the Royal Army Medical Corps with a military status. The conditions, though they do not grant the right to hold a commission, are otherwise fair and equitable. Women may now receive advancement in relative rank as for a R.A.M.C. officer in war, and will receive the same pay and allowances as a R.A.M.C. officer at single rate except that the ration-allowance will be four-fifths of that for a man and there will be modifications in the uniform allowance. For the first time they will be officially allowed to wear ranking badges: the Royal Air Force permitted this in the last war, but it has never been sanctioned by the Army Council. Their uniform will also include the badge of the Corps, but without the motto *in arduis fidelis*—no doubt an excellent compromise, though it might have been more tactful to allow the motto and merely remove the serpent. Women, on the same terms as men, will, in addition, be eligible for employment as civilian medical practitioners, either whole-time or part-time. All requests for personnel will be made by the War Office through the B.M.A. central emergency committee.

1. *J. exp. Med.* 1930 (Suppl. no. 3, p. 89).
2. *Brit. med. J.* Sept. 30, 1939, supp., p. 191.

ANNOTATIONS

A TRUE LIST OF STUDENTS

FOR the first time in the history of medicine we have a true and accurate list of the students commencing the medical curriculum during a calendar year. It will be remembered that two years ago the General Medical Council decided to give up direct registration and simply to issue a list compiled from returns made by the deans of all the preclinical schools in the country. The register, a copy [1] of which we have just received, consists of an alphabetical list of students admitted for the first time to the medical curriculum during the twelve months ended May 31, 1939. It contains the names of 1735 medical and 316 dental students and although accurate is not complete, for owing to some unstated technical difficulty the numbers are missing in the case of such important schools as Liverpool, Aberdeen, Belfast, and University College, Dublin. Hence the list is short by some 400 or even 500 names. In a tabular statement preceding the list the register gives (1) the number of students who passed each of the various recognised preliminary examinations in general education, of which there were 70 varieties, and (2) their distribution over the so-called premedical examinations conducted or recognised by one of 24 licensing bodies. Among the premedical examinations the University of London easily holds the first place with 507 medical students, Edinburgh follows with 202, Cambridge with 172, Glasgow 97, Oxford 93, National University of Ireland 92, English Conjoint Board 83, Irish Conjoint Board 79, Durham 74, and Leeds and Manchester each 63, no other school totalling more than 50 entries. The list is printed on fine white paper with such an air of finality that it cannot have been in the minds of those who designed it that these new students would now be scattered widely over the country, doing their work under novel and distracting conditions. When the initial unsettlement is past they should derive advantage from the variety of experience which is likely to come their way. Some of them may be regretting their withdrawal from the military service which will be the lot of their fellow students in other faculties, but they should be supported by the conviction that they are preparing for a service to the community which is essential to its welfare and can be rendered by no other class of citizen. There is certainly something epic about this new register.

TENDON SUTURE

Couch [2] lays down four principles that govern success in tendon suture, and, without publishing results, makes the bold statement that a properly repaired tendon will yield "practically 100 per cent. function." Most surgeons have to admit that perfect function is seen only in the exceptional case. Nevertheless, Couch's principles are sound and deserve restatement. In the presence of a cut tendon, he says, the surgeon should (1) recognise it, (2) repair it, (3) repair it so that it stays repaired, and (4) make it move. Recognition of a cut tendon is the primary and essential duty of all who treat wounds, and the smaller wounds should be more suspect that the larger. It is remarkable how often the wound is treated without any attempt to test tendon function. To repair so that it stays repaired is the greatest part of the battle. Couch rightly condemns catgut chiefly because of its poor tensile strength, but also because of the intense tissue reaction essential to its absorption, which leads to the deposition of fibrous tissue about the tendon with subsequent adhesion. He uses silk, No. 2 braided, for twisted surgical silk is not strong enough. Without results it is impossible to adjudge between primary suture, which Couch advocates, and secondary suture, which many surgeons including Iselin [3] are convinced is more satisfactory. Movement is essential, both before and after operation, and this can only be carried out if the repair is sound. Furthermore, to repair a tendon if the joints are stiff is obvious folly.

JUDGMENT OF RELATIVE POSITIONS

A PRELIMINARY communication by Wing-Commander Livingston [4] describes his investigations with two pieces of apparatus designed to analyse what he believes to be the sensations directly involved in the judgment of relative position. There is a factor which seems to account for certain differences in the apportioning of space and the selectivity for detail in any scene; this may show considerable variation in strength and induce as it were positive and negative phases. So strong are these phases that they can be projected into consciousness and become the precursors of a neurosis; their influence may actually be carried into calculations which involve spatial judgment.

Livingston's paper gives particular attention to certain features of binocular vision which appear to be closely associated with depth perception, a term he uses to describe the highest stratum of spatial recognition. His rotating depth-perception apparatus is based on Helmholtz's three-pin test; it is however made so that the pins may be rotated in parallel through the full range of the perimeter. The pins are 1 mm. thick and are blacked; the background is flat grey and the illumination entirely without shadows. The observer's head is fixed in a head-rest and clamped. The distance between the two fixed pins and the observer is 11 ft. and the range of movement of the centre pin is 240 mm. Attached to the centre pin, upon the adjustment of which the judgments are made, is a stylo-pen which runs over graph-paper on a moving drum at a standard speed; all movements carried out in the process of resetting the centre pin are thus recorded, and not merely the final position. The points selected for adjusting the centre pin before each test are + 4, − 8, + 5, and − 10 cm. and zero; and the four selected positions are vertical, horizontal and 15° either side of the horizontal. The examiner, having set the centre pin, asks the observer to move it back by means of a cord to a position at which he judges all three pins are equidistant from him. There are twenty separate tests to each graphic record.

It is believed by this procedure that two visual characters are assessed: first the sensitivity of the retinæ to stimulation at disparate points; and secondly the psycho-visual response to such stimuli; this latter calls for interpretation varying in acuteness according to the rotated position of the pins. In the vertical position assessment is under normal conditions, but in the horizontal it is impossible to analyse

1. Register of Medical Students and of Dental Students admitted to schools of medicine and to schools of dentistry in the academical year 1938–39. London: published for the General Medical Council by Constable and Co. Pp. 81.
2. Couch, J. H., *Canad. med. Ass. J.* July, 1939.
3. Iselin, M., Chirurgie de la main, Paris.
4. Livingston, P. C., *Brit. J. Ophthal.* 1939, **23**, 540.

the results accurately, the graphic record differing greatly between individuals. When the pins are moved 15° on either side of the horizontal there is an immediate return of the power to analyse depth, a remarkable finding considering that only a very small binocular factor has actually been regained.

There is a third factor necessary to complete the accurate assessment of depth, as well as disparate retinal-point stimulation and unrestricted binocular vision; this is demonstrated by the rotating stereogram and pictures. The charts for use in this apparatus are composed of sections showing dissimilar objects and others in which are designs for stereoscopic perception. It seems that most observers experience alternate vision, the quality of which shows marked variations; some are equally balanced, while others are irregular, slow or rapid. Strong mastery of one eye and a perfectly balanced macular reception tend to negative the faculty of depth perception. Livingston comments that these results suggest that the comprehension of depth depends upon the presence of alternation and its character and rhythm, and that in predominantly binocular vision, or with perfectly even macular reception, the essential parallactic effect brought about by alternation is missing and accurate analysis of relative position is faulty.

By means of the rotating stereogram, the stereoscopic sense is first developed by the charts showing dissimilar objects and the macular reception-rate adjusted until the alternation is rapid and of equal periodicity. The stereoscopic section of the charts is now worked upon and depth appreciation is established. The results appear to support the contention that alternation is essential for complete and accurate spatial orientation.

BLINDNESS IN INDIA

THE blind in India today are estimated at one and a half million, and the partially blind at three million. At least half of this blindness is preventable—most of it is due to such preventable or at any rate remediable conditions as infantile ophthalmia, smallpox and trachoma. The difficulties to be surmounted are greatest in rural districts. In the large towns patients can get adequate treatment at hospitals, but in the smaller towns and villages they too often fall into the hands of quacks. Other factors in the Indian social and economic system prevent proper organisation of the education and treatment of the blind. Many of the population cannot read or write, and therefore the principles of ophthalmic hygiene and directions for obtaining treatment cannot reach them unless they are broadcast, an expensive and difficult thing to arrange. Education by means of Braille books is complicated by the number of languages and dialects spoken. The National Institute for the Blind suggests that books should be written in two basic codes, one for languages of Aryan origin and the other for those of Dravidian origin. Finally, the rigid caste system and the fatalistic attitude of the average oriental to disease discourage attempts to alleviate the lot of the blind. In 1931 the National Institute for the Blind addressed a memorial to the Secretary of State for India, included in a recent booklet,[1] asking for Government support for their efforts. This was not granted owing to the financial stringency of the time, nor did the local governments favour the proposal to form an advisory committee to organise the welfare of the blind and the prevention of blindness. Since 1932 the Institute has coöperated with the Indian Red Cross in financing lectures on blindness-prevention for school-teachers, in the hope that they will hand on their knowledge to the children and so influence a wide circle of parents and friends.

Pamphlets have been issued to the general public and a few broadcasts have been arranged for the illiterate. The work done, on a scale limited through lack of funds, by the several relief organisations in India, both in propaganda and in providing travelling hospitals, camps and dispensaries, has demonstrated what could be done with adequate financial backing. The immensity of the need places it beyond the scope of voluntary effort, and no doubt in time backing will have to come from the Government.

1. Blindness in India. 1939. London: National Institute for the Blind. Pp. 24.

EXPERIMENTAL TREATMENT OF TUMOURS

THE fillip given to the chemotherapy of bacterial disease by the discovery of sulphanilamide is being followed by a fresh attack on the chemical treatment of cancer. Several years ago Haddow[1] discovered the curious fact, since confirmed, that the chemical carcinogens themselves are able to inhibit the growth of transplanted tumours. This observation finds a parallel in the regression of spontaneous growths and their metastases when treated with radium and X rays, physical agents which are known also to cause cancer. In a previous issue we called attention to the success of Strong[2] in bringing about liquefaction and regression of spontaneous mouse tumours in 6 out of 25 animals by feeding them with heptyl aldehyde. An analysis by Andervont and Shimkin, of the manner in which Coley's fluid produces regression, has been in progress for some years, and they have recently[3] come to the conclusion that the bacterial filtrate acts in an entirely non-specific way by lowering the ascorbic-acid content of the tumour, thus damaging its fragile capillaries so that hæmorrhages follow. The hæmorrhage brings about anæmic necrosis, stimulates macrophage invasion of the tumour and finally scar formation. By increasing the ascorbic-acid content by injection, the inhibitory action of the filtrate is opposed.

One of the latest attempts to inhibit tumour growth, reported by Floyd Turner,[4] has been made with non-carcinogenic derivatives of phenanthrene on the supposition that some of these substances resemble colchicine in chemical structure and pharmacological action. Turner maintains that although colchicine does not arrest tumour growth, mitosis is without doubt affected and therefore some allied substance might be found which would stop cell division effectively. Seventy-five compounds, most of which were newly synthesised by Small and others for a different purpose, were accordingly tested against transplanted and spontaneous tumours. The transplantable tumour used was S.37 inoculated intradermally. Under these circumstances its natural regression-rate is 12 per cent., whereas after a single intraperitoneal dose of one of the tested substances, dihydrothebainone hydrochloride, Turner obtained regression in 50 per cent. of mice—a striking increase. Since human cancer is not a transplanted but a spontaneous growth he very properly followed his initial success by tests on mice bearing spontaneous mammary carcinomas. Unfortunately, not one regression followed the trial of 15 different compounds.

1. Haddow, A., *Nature, Lond.* 1935, **136**, 868.
2. Strong, L. C., *Lancet*, 1938, **1**, 505.
3. Andervont, H. B., and Shimkin, M. B., *Amer. J. Cancer*, 1939, **36**, 451.
4. Turner, F. C., *Publ. Hlth Rep., Wash.* July 14, 1939, p. 1279.

We are frequently reminded in dealing with Nature that it is well not to be bound too rigidly by logic. It is wise, however, to understand one's position and to know when one is following and when departing from logic. The premise that colchicine affects mitosis is undoubtedly true. It is equally true that it affects mitosis of normal as well as malignant cells; there is no specificity about its action. Do we want a therapeutic agent that will prevent normal cell-replacement, repair, and the adaptation to slight changes in function that go on all through adult life? Unless specificity is attained, or action is almost instantaneous through a limited number of doses, we should be risking impairment of all these defences.

A LETHAL ORGANISM

AT a time when medical expediency occupies the minds of most doctors, epidemics of illness are a subject of more urgent thought. Guthrie and Montgomery's account of an outbreak of food-poisoning in Glasgow [1] forces the reader to take stock of his knowledge of the diseases caused by the salmonella group of organisms.

The outbreak had few of the features so familiar to practitioners. All but 1 of the patients were infants under two years of age. The infecting agent in 27 of the 28 children was *Bacterium enteritidis* or Gaertner's bacillus and in the odd instance it was *Bact. enteritidis* var. *dublin*. Most of the patients were probably infected from the same source, but at least 3 contracted the illness in widely separated homes and within a few months of each other. (That sporadic infections with salmonella are common is well illustrated by Smith [2] who found that 26 out of 46 patients were entirely unrelated.) The clinical features of the outbreak were, to say the least, unusual. Of the 28 children 15 died and in these the illness was a septicæmia almost from the start. Green stools, vomiting, and convulsions were the common signs of infection, but the intestinal lesions were often relatively trivial and there was no blood or pus in the fæces. Purulent meningitis was found in the *dublin* case and in 10 of the others. The tendency for *Bact. enteritidis* var. *dublin* to cause meningitis is well known, but meningitis due to Gaertner's bacillus is a rarity and it is worth recalling that even in the largest series of cases of salmonella meningitis [3] described, only 5 of the 35 organisms were unequivocally identified. In the Glasgow epidemic lumbar puncture gave the organism in abundance in 3 of the children, and in 12 others the bacillus was recovered from the meninges post mortem. Another point of interest was that 9 of the infants had definite cholecystitis—an appreciable number when compared with a control group of 5000 autopsies performed at the same hospital in which no other instance of cholecystitis was recorded. The claim that this association of enteritis, cholecystitis, and meningitis is unique is probably valid. One has to remember that when the usual equilibrium between the host's resistance and the invasive power of the organism is upset, then the familiar clinical picture, which is the index of that equilibrium, will also be lost.

As in many other salmonella epidemics no definite source of the disease was found. There has been much accurate and painstaking work to identify the types of salmonella bacilli and already about fifty are described in the larger textbooks. But there is still much to learn about the epidemiology of food poisoning. We know that beef, milk, and eggs are foods to suspect in an outbreak and that rats, mice, and men may also play a part as carriers. It is, however, a significant commentary on the state of our knowledge of the epidemiology of this group of illnesses that the present outbreak ceased only when the sick-nursery which had housed most of the children was closed.

1. Guthrie, K. J., and Montgomery, G. L., *J. Path. Bact.* September, 1939, p. 393.
2. Smith, J., *J. Hyg. Camb.* 1933, **33**, 224.
3. Bahrenburg, J. H., and Ecker, E. E., *J. inject. Dis.* 1937, **60**, 81.

TRAFFIC IN OPIUM AND DANGEROUS DRUGS

THE advisory committee on traffic in opium and other dangerous drugs has published an analytical survey of the annual reports received from 49 sovereign states and some 80 colonies or dependencies for the year 1937 on world manufacture and trade in narcotics. The report covers 44 pages and is followed by 16 annexes, bristling with statistics. In the United States addiction to marihuana (Indian hemp) continues to be a serious problem; the drug has been seized in 37 out of the 48 states and it is the favourite drug of addiction in Cuba. The prevalence of addiction to codeine in Canada is noted, and the use of smoking opium for hypodermic injection is encountered on the Pacific coast. Heroin made its first appearance in Vancouver in 1937. In Hong-Kong a campaign against heroin pills resulted in some 3500 flats being visited and nearly four million pills confiscated. In the Netherlands Indies, morphine and heroin injections are superseding the opium pipe. In Shanghai it appears to be a common practice to smoke heroin mixed with tobacco either in a pipe or cigarette. The municipal authorities in Shanghai have come to the conclusion that addiction will never be eradicated by direct action nor even by a system of registration, and that "the only practical solution lies in the gradual suppression of opium at its source of origin." It is interesting to learn that in India poppy cultivation has ceased in the Punjab for the production of opium, though cultivation of 914 hectares is licensed for poppy heads. The quantity of raw opium produced in India in 1937 is given as 36,852 kg., with some 11 per cent. morphine. The total consumption of excise opium in British India for all purposes, medical and non-medical, in 1937 was 158,049 kg. or 0·62 g. per head. There have been large numbers of applications to the government of India for transhipments of Iranian opium destined for the Far East. In Burma, at 112 of the 123 opium shops the raw drug is sold directly by the resident excise officer, a government official. As regards control of illicit traffic, it is reported from Hong-Kong that fines and imprisonment appeared to make no impression; the place is flooded with illicit prepared opium and the supply of Chinese and Iranian raw opium shows no signs of diminution. The remark is general that shortness of supplies leads to high prices and high prices lead to adulteration.

OSSEOUS DYSTROPHY FOLLOWING ICTERUS NEONATORUM

IN our columns last February Robson and Todd [1] described a case of fibrocystic disease of bone with skin pigmentation and endocrine dysfunction. In the correspondence which followed Professor Leonard Parsons referred to Dr. Frances Braid's case, probably the first record of such a condition in a male. Dr. Braid [2] has now given us a full account of this case followed from birth to ten years, together with

1. Robson, K., and Todd, J. W., *Lancet*, 1939, **1**, 377.
2. Braid, F., *Arch. Dis. Childh.* September, 1939, p. 181.

a second case, this time a girl. Albright [3] and his collaborators have described seven more patients.

The features of the syndrome are extensive osseous dystrophy (suggesting fibrocystic disease) either generalised or unilateral, pigmentation of the skin, and, in girls, precocious sexual development. Though the clinical picture resembles hyperparathyroidism, there is no negative calcium balance, and when the neck has been explored no parathyroid tumours have been found. The peculiar interest of Dr. Braid's patients comes from the fact that both children started life with severe icterus neonatorum, bleeding, and later putty-coloured stools. Both were saved by the administration of whole blood intramuscularly. Later both developed pigmentation of the skin, and when about two years old both began to have a series of spontaneous fractures, with consequent deformities. X rays showed generalised involvement of bones, with a picture suggesting fibrocystic disease. When two and a half years old, the girl had a menstrual period and enlargement of the breasts.

Two other cases in the literature began with icterus gravis—namely, those of McCune and Bruch [4] and of Summerfeldt and Brown. This is a high incidence of icterus gravis, in a very rare condition, and it has led Dr. Braid to think that it is something more than a coincidence. The icterus gravis, she suggests, has caused impairment of the liver function and consequent bone dystrophy. In support of this thesis she quotes some interesting experimental and clinical evidence. The experimental evidence is as follows. Buchbinder and Kern [5] found that 60 to 70 days after ligation of the common bile-duct in puppies, there was "a wide grade rarefaction and cortical thinning" of bones. One animal developed bilateral cysts of bones. These changes occurred almost exclusively in growing animals. Greaves and Schmidt [6] also showed that rachitic rats were far less easily cured by vitamin D if their bile-ducts were tied or their liver function otherwise injured. An important piece of clinical evidence is that of Gerstenberger, [7] who described as "hepatic rickets" a condition of rickets associated in three children with cirrhosis of the liver. The disease had developed in spite of adequate antirachitic diet and did not respond to full doses of cod-liver oil or the mercury-vapour lamp.

In her own cases, Dr. Braid investigated both the calcium and phosphorus metabolism and the liver function. Blood levels of calcium and phosphorus were normal, there was a positive calcium balance, and the blood phosphatase was high. Liver function was more difficult to investigate. In the child of two and a half the tests were inconclusive apart from a possible excess of urinary urobilinogen. In the boy of ten an excess of urinary urobilinogen had been detected since he was six years of age. The total blood protein was first noted when he was two; it was then lower than normal, and it became progressively lower, the globulin being chiefly affected. The ratio between urea and amino-acid nitrogen in the blood was upset, indicating a diminished capacity to manufacture urea. The blood uric-acid was high as also was the urinary output, indicating a diminished capacity to destroy uric acid. The glucose-tolerance test showed an impaired capacity to utilise sugar. Both cases showed a lower level of vitamins in the blood than normal. On this evidence Dr. Braid suggests that the bone dystrophy is due to some impairment of a function of the liver, possibly a mechanism concerned with the storage and utilisation of vitamins.

3. Albright, F., Butler, A. M., Hampton, A. V., and Smith, F., *New Engl. J. Med.* 1937, **216**, p. 727.
4. McCune, D. J., and Bruch, H., *Amer. J. Dis. Child.* 1937, **54**, 1.
5. Buchbinder, W. C., Kern, R., *Amer. J. Physiol.* 1927, **80**, 273.
6. Greaves, J. D., and Schmidt, C. L. A., *Univ. Calif. Publ. Physiol.* 1934, **8**, 49.
7. Gerstenberger, H. J., *Mschr. Kinderheilk.* 1933, **56**, 217.

POLIOMYELITIS IN SCHOOLS

THOUGH poliomyelitis is uncommon in residential schools no disease causes more anxiety and difficulty in them. Dr. R. E. Smith, of Rugby School, has therefore done well to review [1] the more important outbreaks of recent years and the lessons to be learnt. Judging by notifications, he says, the disease appears to be on the increase; but it is recognised that notification in this country has been so faulty that comparison of one year's return with another tells us little, and in districts where all notifications are followed by search additional cases are always brought to light. At present it seems to be uncertain whether semi-closed communities are less or more liable to poliomyelitis than open communities; the incidence in them appears to be very low, but the outbreaks, especially in preparatory schools, are sometimes large. The question that chiefly interests the school medical officer is—what advice should he give the headmaster when poliomyelitis appears among the staff or pupils? Smith believes that when only one case is discovered the school should as a rule continue its work, all parents being informed and direct contacts being kept under observation. When two or more cases appear together the same procedure should be followed, but parents should be "given the right" to remove their children if adequate isolation at home is possible. If there are any secondary cases "the parents must be given the right and take the responsibility for removing their sons or daughters; but they must fully understand that they are removing their son from an infectious atmosphere, that the chance of his being infectious, whether as an abortive or a paralytic case, is greater than the chance of his developing paralysis even if he stays at school. This makes it essential that *he should be isolated in transit and at home.*" A full three-weeks' quarantine should be enforced and the home doctor and home medical officer of health should be notified. The risk of dissemination of the disease through controlled dispersal is, in Smith's opinion, theoretical rather than substantial; he cites experiences in the Felsted, Stowe, and Wellington outbreaks in support of this view. If this is true, however, does it not follow that the school should encourage—rather than merely permit—the removal of children as soon as secondary cases have arisen? For the risk of remaining in the closed community is by no means negligible.

We regret to announce the death in Edinburgh on Monday last of Dr. JOHN DIXON COMRIE, physician to the Royal Infirmary and vice-president of the Edinburgh Royal College of Physicians. Dr. Comrie, who was in his 69th year, was well known for his studies of the history of medicine from the time of Hippocrates.

1. Smith, R. E., *Guy's Hosp. Rep.* 1938, **89**, 139.

For the present THE LANCET *continues to be printed at Aylesbury. An office has now been opened at 26, Temple Street, Aylesbury, and the Editor can be addressed by letter or telephone (Aylesbury 315). The London office remains open at 7, Adam Street, Adelphi, W.C.2, telephone Temple Bar, 7228/9.*

THE NEW ENDOCRINOLOGY

A series of articles by Prof. E. C. DODDS, F.R.C.P., *director of the Courtauld institute of biochemistry at the Middlesex Hospital, based on lectures delivered at the British Postgraduate Medical School*

IN these articles I shall try to summarise present views on the endocrine system. At first sight this task may appear relatively simple, for information is available in a steady flood. But unfortunately many of the observations are unconnected, unconfirmed, or (worse still) contradictory. Hence the general reader may easily go astray unless he has guidance. An additional source of difficulty is that the subject advances simultaneously on any number of fronts. For example the amateur endocrinologist may be plunged into experimental physiology—such as the practical study of the relationship of the posterior lobe, the pituitary stalk and the base of the brain to diabetes insipidus—or in dealing with the cortical hormones he may find himself bewildered among the uninterpretable terminology of the sterol chemists.

In this series I shall write only on the more modern aspects, and leave aside hormones like insulin, adrenaline, and parathyroid, which have often been reviewed.

I—THE PITUITARY

The determining factor in endocrinology is a gradual recognition of the importance of the anterior lobe of the pituitary. The fact that this gland controls or regulates the functions of the other endocrine glands has been proved by studying the effects of hypophysectomy, which produces immediate changes in the gonads, suprarenal cortex, and thyroid, and also (it is said) in the parathyroid and islands of Langerhans, besides causing cessation of growth. Fig. 1 is intended to give a comprehensive view of the actions of the anterior lobe of the pituitary on other glands and internal secretions. It will be seen that the secretions of these glands are in a way controlled by the anterior lobe, and the following controlling hormones have now been shown to emanate from this body.

1. The growth hormone.
2. The gonadotrophic hormone.
3. The thyrotrophic hormone.
4. The adrenotrophic hormone.
5. The lactation hormone (prolactin).
6. The trophic hormones—the pancreatic hormones (islands of Langerhans) and the parathyrotrophic hormones.

In the first place it must be pointed out that these substances have not been isolated as chemical individuals, although they have been separated from each other. In general they are of a protein character and their activity can be destroyed readily by most of the methods which break up proteins. The molecule appears to contain a considerable proportion of carbohydrate and they appear to be glycoproteins. They differ from ordinary proteins in a number of other precipitation reactions; for example, they are not precipitated by concentrations of salicylsulphonic acid which precipitate other proteins.

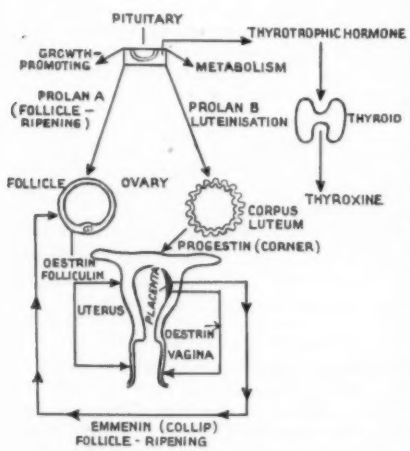


FIG. 1—Interaction of the sex hormones.

THE GROWTH HORMONE

One of the pituitary substances, when administered to immature animals, accelerates their rate of growth. It will not, however, cause growth beyond the normal stature of the animal. The failure to produce giant animals is not clearly understood, but it has been attributed to the secretion of an anti-growth hormone by the animal so treated. It has also been suggested that the growth hormone is identical with prolactin. Owing to the difficulty of preparation and standardisation, the growth hormone has not yet come into clinical use. One of the most successful ways of standardising it is to employ strains of dwarf mice. The dwarfism of such mice has been found to be due to under-development of the anterior lobe of the pituitary, and when they are injected with the growth hormone, they can be made to grow to the normal size.

THE GONADOTROPHIC HORMONE

One of the earliest signs following hypophysectomy is cessation of the œstrus cycle in the female animal and diminution in the size of the external genitals of the male. In course of time the secondary sexual organs will atrophy completely in both male and female, and this can be treated by implantation of anterior lobe into the hypophysectomised animal or alternatively by injecting suitable extracts. Many attempts have been made to separate the gonadotrophic principle of the anterior lobe of the pituitary, but unfortunately these attempts have not yet been successful. The most recent observations by H. M. Evans suggest that the gonadotrophic fraction of the pituitary contains the following hormones:—

THOSE INFLUENCING THE FEMALE GENITAL SYSTEM

(1) The follicle-stimulating hormone, capable of producing maturation of the follicle, ovulation and corpora hæmorrhagica.

(2) A follicle-luteinisation factor, capable of converting the non-ruptured immature follicle or the corpus hæmorrhagicum into a corpus luteum.

(3) An interstitial-cell-stimulating substance, capable of stimulating the ovarian interstitial cells to secrete an œstrogenic hormone.

(4) An inhibitory substance.

THOSE INFLUENCING THE MALE GENITAL SYSTEM

(1) A testicular rehabilitation hormone, capable of restoring the histological architecture of the testes but incapable of causing spermatogenesis.

(2) A spermatogenic hormone, capable of acting upon testes rehabilitated by the above hormone but not acting in its absence.

(3) An interstitial-cell-stimulating hormone acting upon the testicular interstitial cells and causing them to secrete the male sex hormone.
(4) An inhibitory substance.

Thus the gonadotrophic hormone appears to consist of three essential parts which act in a different manner on the ovaries and testicles; and it is interesting to note that it will act on either sex. The gonadotrophic substance is found in three other sites besides the pituitary—namely, the serum of pregnant animals, and the placenta and the urine of pregnant primates. From the serum of the pregnant mare it is possible to extract a substance consisting in the main of the follicle-stimulating fraction, with varying amounts of interstitial-cell-stimulating substance. The injection of this hormone will cause rapid maturation of the follicles and ovulation attended with very little luteinisation. On the other hand, extracts of the urine from pregnant primates contain a substance, known as prolan, whose action in the main is luteinising. This also contains interstitial-cell-stimulating hormone. That from the placenta is almost entirely luteinising in character.

The confusion resulting from a study of the factors in these various gonadotrophic substances can well be imagined.

THE THYROTROPHIC HORMONE

It has been found that injections of suitable extracts of anterior lobe of the pituitary gland cause an increase in the basal metabolic rate, exophthalmos and a histological appearance of the thyroid gland closely resembling that of Graves's disease. If the injection is persisted in the extract loses its effect and the animal becomes immune. This immunity can be transferred by injecting the serum of an immunised animal into a normal one. J. B. Collip, who made this observation, postulated the presence of an antihormone. To this I shall return presently.

ADRENOTROPHIC HORMONE

Another of the earliest signs of hypophysectomy is a very rapid diminution in the thickness of the suprarenal cortex. In some species, particularly birds, the interference with the cortical function is so severe as to cause death. In the duck, for example, it is necessary to inject cortin in order to maintain life after hypophysectomy.

This corticotrophic hormone has been separated from the others but not isolated in a pure form.

PROLACTIN

The presence of prolactin was detected by injecting extracts of the anterior lobe of the pituitary into pigeons and causing development of the crop-glands. By injecting prolactin it is possible to obtain lactation in the mammal, providing the structure of the breast has been built up by œstrone treatment. As has already been pointed out, this hormone may be identical with the growth hormone, as Riddle believes.

TROPHIC HORMONES

The pancreatic and parathyrotrophic hormones are examples of the trophic hormones. It has been claimed in both these cases that histological changes can be detected after hypophysectomy, and that such changes can be prevented by administration of suitable extracts of anterior lobe. This, however, is not absolutely certain, and much more work will have to be done before these observations can be completely explained.

"*Houssay animals.*"—Houssay made a remarkable observation that removal of the pituitary from the depancreatised dog resulted in disappearance of the glycosuria and an apparent restoration of the dog to normal. Such animals are now known as Houssay animals, and are prone to suffer from hypoglycæmia. This observation has now been extensively confirmed throughout the world, and sheds an entirely new light on the rôle of the pituitary in carbohydrate metabolism. Houssay and his collaborators found that when such dogs are injected with extracts of the anterior lobe ketonuria and glycosuria develop.

F. G. Young has lately shown that it is possible to produce an extract which, when injected on some three occasions into the intact dog, will cause permanent diabetes. This fundamentally important observation indicates for the first time the production of diabetes by the injection of an extract of normal tissue, and it is also an example of the production of a permanent lesion by the injection of a naturally occurring substance. The islands of Langerhans are no longer to be seen in the pancreas of these animals. The diabetes is characterised by a severe glycosuria, relative resistance to insulin, and absence of ketonuria.

There is little doubt that development of this work will make much clearer the whole mechanism of diabetes mellitus.

ANTIHORMONES

As already pointed out, the thyrotrophic hormone loses its action on repeated injection, but the immunity obtained is temporary. Collip postulated that repeated injections of this substance cause secretion of the anti-substance and he suggested that the activity of any hormone depends on the balance between the amount present and the amount of the antihormone. This he called the law of inverse proportion. Powerful antihormone properties have been ascribed to the growth hormone and to thyrotrophic and gonadotrophic hormones. Many attempts have been made to discover the main characteristics of this antihormone reaction, and new advances in this direction are hoped for. Attempts have been made to treat Graves's disease with antithyrotrophic hormone, but so far these have not been successful.

OTHER PITUITARY HORMONES

Some years ago B. Zondek demonstrated that an extract of the pars posterior of the pituitary is capable of causing abnormal *pigmentation* in certain tropical fish. He suggested that this hormone is responsible for the conversion of melanogen into melanin. R. S. Ferguson found it in melanotic tissue and in the urine of patients with general melanomatosis. The claim is also made that it will protect against diabetes insipidus, and Ferguson has used this as a basis for its standardisation.

Collip and his collaborators have demonstrated in the pars anterior and pars intermedia the presence of *metabolic* principles which on injection immediately increase the metabolic rate. Such an effect they believe cannot be due to the thyrotrophic hormone, for this requires time for action. By various eliminating experiments it can be proved that this metabolic principle acts directly on the cells of the body, stimulating the metabolism and producing a big increase in the consumption of oxygen.

The classical work leading to the isolation of the oxytocic and vasopressive principles of this part of the pars posterior of the pituitary is so well known that little need be said here. It is very difficult

to allot a physiological rôle to these substances. It has long been said that *oxytocin* is responsible for the onset and conduct of labour, but until comparatively recently no clear-cut evidence of this was obtained. Now however S. W. Ranson et al. have shown that labour is prolonged indefinitely in an animal with diabetes insipidus in which the infundibulum and base of the brain have been injured, and that this delayed and protracted labour can be adequately treated by injection of oxytocin. Thus it seems that at last a definite rôle has been found for this substance in animal physiology.

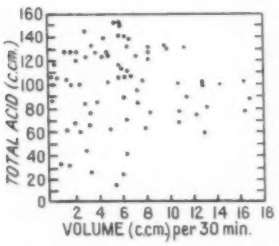


FIG. 2—Relationship of acid to volume of gastric juice in a hypophysectionised animal, showing abolition of pari passu increase.

With regard to *vasopressin* one of the difficulties has been the relative absence of vasopressive changes in hypophysectomised animals. From a preliminary series of experiments, Dodds, Noble, et al. felt that they had obtained very definite evidence of the physiological part played by the pituitary lobe and by the vasopressive principle. They showed that injections of large quantities of this substance produced a severe hæmorrhagic lesion in the acid-bearing areas of the stomach, and that this was caused essentially by inhibition of the gastric secretion, from which they concluded that for secretory activity of glands two factors were necessary—firstly, stimulation of the cells of the particular gland, and secondly, marked increase of the blood-flow to supply fluid to the gland. This could only be achieved if the flow through the capillaries to the gland was controlled by vasopressin. In the case of the stomach, a stimulant known to produce a secretion of hydrochloric acid acts in two ways, firstly by causing the cells to secrete hydrochloric acid, and secondly by acting on partially constricted capilaries, causing wide dilatation and consequent increase in the blood-flow. By this means a constant relationship is ensured between the acid content and the volume of the juice. This is demonstrated in fig. 3, which shows the relationship between acid and volume in a number of normal animals. Thus it can be seen that any increase in the acid is followed by an increase in the volume of juice secreted. In hypophysectomised animals on the other hand there is no relationship whatever between these two factors, as is evident from the complete scattering of the values on the chart (fig. 2). It is suggested that this is due to the lack of vasopressin.

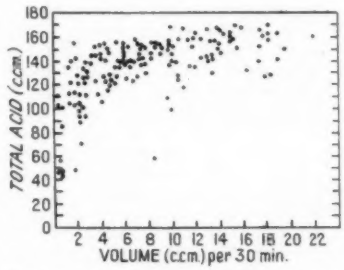


FIG. 3—Normal relationship of acid to volume of gastric juice, showing pari passu increase.

SPECIAL ARTICLES

ÆTIOLOGY AND TREATMENT OF OSTEO-ARTHRITIS

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(*Concluded from p. 756*)

Treatment

Osteo-arthritis is by its very nature an incurable condition. The objects of treatment are therefore (1) to prevent or delay as far as possible further deterioration of the joint and (2) to relieve symptoms, of which the chief is pain. Although surgical measures are very useful in osteo-arthritis, they cover too wide a range for consideration in this paper. Non-operative measures only will therefore be discussed.

PREVENTION OR DELAY OF DETERIORATION

Further deterioration of the joint may be prevented or delayed by treatment directed towards the primary cause or by treatment which aims at improving the local circulation.

Treatment of the primary cause.—From what has already been said it is clear that osteo-arthritis is never a primary condition but always the result of previous damage to the joint. Where the original damage was mechanical, such as a fracture, little can usually be done if osteo-arthritis has already begun. It is too late to attempt reconstruction of the articular surfaces where these have been displaced, but in some cases the general alignment of the joint can be improved by an osteotomy above or below it, and such an operation is then justifiable.

Often, however, there has been no mechanical injury, and the osteo-arthritis is the result of damage caused by an infective or metabolic arthritis. Often this primary cause may still be active, and the symptoms may be due to this rather than to the more obvious osteo-arthritis. Although I suggest that osteo-arthritis is a purely local mechanical process, it does not follow that general treatment should be neglected. In that type of case in which some general constitutional disturbance, such as gout, is the primary cause of the arthritis, treatment of the primary condition is still the most important consideration.

Treatment of the local circulation.—It has been suggested that the state of the local circulation plays an important part in the production of osteo-arthritis, and that anæmia of the part accelerates both the degeneration of the articular cartilage and the sclerosis of the bone ends. Further, in the absence of an efficient circulation, the synovial membrane cannot secrete a proper synovial fluid, and the absence of proper lubrication in turn must also accelerate the degeneration and wearing away of the articular cartilage. It is for these reasons, as previously stated, that osteo-arthritis is so much commoner and more severe in elderly or arteriosclerotic patients.

Local heat in the form of diathermy or infra-red rays, general massage to the limb, and graduated

exercises (without weight bearing) all help to stimulate the circulation and so assist in preventing further deterioration of the joint.

RELIEF OF SYMPTOMS

Pain is the one great symptom in osteo-arthritis, and it is for the relief of pain that the great majority of patients seek treatment. Unfortunately the various forms of therapy which have been found to be of service for the relief of pain are too often prescribed indiscriminately and with little regard for their precise indication. It must be emphasised that there are several possible causes of pain in osteo-arthritis, each of which produces a certain type of pain, and that a specific treatment is available for each type. It is therefore essential to determine in each case the exact cause or causes of pain, so that the appropriate treatment may be given with some hope of success.

Pain associated with tension in bone is seen most typically in cases of bone sarcoma or Paget's disease. It is liable to develop, however, in all cases in which there is sclerosis of bone; hence it is often met with in osteo-arthritis. It is described as a constant ache or "boring" pain, unaffected by rest or activity, and is usually at its worst when the part is warm; it is therefore usually bad at night. It is often affected by changes in the weather. It is for this type of pain that deep X-ray therapy is of especial value; it usually gives relief in the course of a week or two after the treatment. X-ray treatment also appears to exert some effect in delaying the progress of the degenerative changes.

A man, aged 65, complained of pain in the left hip of several years' duration, which had increased in severity during the last few months. The pain was continuous, worst at night, and little affected by activity, though it was often worse after he had been on his feet a lot. Movements of the joint were fairly good, with flexion to a right angle but with limitation of abduction and rotation. No pain on movement unless forced. Radiography showed loss of articular space, slight formation of osteophytes round the head of the femur, and considerable sclerosis of the head of the femur and acetabulum.

The joint was manipulated under anæsthesia, and this was followed by a course of heat, massage, and exercises, which failed to relieve the pain. The patient was then referred for deep X-ray treatment, which almost entirely relieved his pain in a month after the treatment. There was no justification for manipulation in this case, for the pain was typical of the type most benefited by deep X rays.

The Laval operation, which consists of drilling a hole into the bone close to the articular surface, also appears to relieve this type of pain, possibly by relieving tension inside the bone.

Pain due to adhesions and fibrosis is caused by the stretching of adhesions or of contracted parts of the articular capsule. It is always aggravated by activity and relieved by rest; it is therefore always at its worst towards the end of the day. On examination it is found that pain is only produced when movements are pushed to extremes; movements which avoid the extremes of which the joint is capable are painless, even under load. It follows that the stiffer the joint, the greater is its liability to this type of pain. This is one of the commonest causes of pain in osteo-arthritis.

The treatment for these cases is manipulation of the joint. This is done under an anæsthetic in order to obtain relaxation, the manipulations being performed with the articular surfaces distracted from one another if possible. Only a slight increase in movement should be aimed at in each direction to avoid a subsequent reaction. It is far better to repeat the manipulations on several occasions than to attempt too much at one time. In the intervening periods active assisted exercises are given.

When the adhesions can be felt or can be heard to give way during the manipulation, the prognosis is good; when, however, an elastic resistance is encountered, which can only be stretched, the limitation of movement is due to a general fibrosis in the capsule, and little improvement can then be expected. Gradual stretching of the capsule is all that can be done and rarely gives lasting improvement, for the fibrous tissues tend to contract again.

A woman, aged 67, complained of pain in the lower thoracic region of the spine, which had been present on and off for thirty-five years. There was a vague history of a fall at about the time when she first had pain. For several years she had had pain every day, worst in the latter part of the day, but little pain at night. It was relieved by lying down and resting, though some discomfort still persisted. Her spine was not very stiff, though pain was produced by forced movements of the lower thoracic portion. Radiography showed osteo-arthritis between the ninth and eleventh thoracic vertebræ, with gross formation of osteophytes. After a manipulation under anæsthesia the pain was immediately and almost completely relieved. The patient remained free from pain for the next six months and was then lost sight of.

This is a striking example of the dramatic results obtainable by manipulation in suitable cases, even though advanced osteo-arthritis is present, and this is especially true of the spine. In her case the symptoms were typical of those caused by the stretching of soft parts, resulting from stiffness or "locking" of the joints.

Pain due to nipping of soft tissues.—The redundant folds of synovia, or even portions of the capsule, are liable to be nipped by osteophytes during movements of the joint. The resulting pain resembles that caused by adhesions in that it is present only during activity and is relieved by rest. It differs from it, however, in two respects: (1) the pain is sharper and more momentary, the patient remarking that the joint tends to "give way" suddenly, and (2) the pain is on the opposite side of the joint to that caused by the stretching of adhesions. For instance, in the knee-joint, during flexion pain due to stretching is felt in the front part of the joint, whereas pain due to compression or nipping is felt at the back of the joint. This type of pain is difficult to relieve except by limiting extreme movements of the joint. Manipulation sometimes helps, presumably by giving greater mobility and hence more "play" in the articular movements. Sometimes, when the symptoms are very definite and localised, excision of affected portions of the synovial membrane or of osteophytes is worth while.

A woman complained of pain in the metatarso-phalangeal joint of the great toe. The pain would come on very suddenly, so that she was immediately unable to put the toe to the ground. The pain would persist for variable periods up to several hours and then gradually pass off. There was slight osteo-arthritis of the joint and a point of acute tenderness on the dorsum over the articular line when the pain was present. The pain was relieved by applying strong traction to the toe to distract the joint surfaces for a few moments and then moving it in all directions while maintaining traction. The pain disappeared suddenly and was believed to be due to nipping of a synovial fringe. Thereafter the patient was able to get rid of the pain as a rule by pulling on the toe for a few moments herself.

I have had personal experience of this condition, which is not at all uncommon.

Pain due to grinding together of rough surfaces.—Since the articulating ends of a bone are believed to be insensitive, this pain is presumably caused by the compression of soft parts caught between the opposing rough surfaces. Pain due to this cause is again only present during activity but differs from the preceding two types in several respects. Thus, it is only present when movements are performed under load. If traction is applied to the limb, the pain on movement is at once relieved. The only exception to the rule is the knee-joint, in which patellofemoral movements are always performed under pressure owing to the tone of the quadriceps muscle, and traction on the limb cannot in any way relieve this pressure. Further, when the joint is under load, pain is experienced with all degrees of movement and not merely at the extremes. This type of pain naturally occurs most commonly in the lower limb. It can only be relieved by fitting some appliance, such as a weight-bearing calliper, which reduces the load on the joint. In the case of the hip, for example, this still permits movements, but it relieves the pressure on the joint. This type of pain is not only common but also the most difficult to treat by conservative means and is therefore one of the main indications for some form of surgical operation.

Pain due to inflammation.—Osteo-arthritic joints are particularly liable to recurrent attacks of inflammation, which may be due to one of three causes: (1) recurrent attacks of the inflammation which caused the original damage to the joint and initiated the osteo-arthritis; (2) attacks of fibrositis, which always tends to settle in a weakened or damaged spot; and (3) the inflammation which is apt to follow the minor traumata to which such a vulnerable joint is liable.

Pain of this type has the characteristics of pain due to inflammation elsewhere in the body and is associated with an increase in the stiffness of the joint and with spasm of the muscles. It is made worse by continued activity but not entirely relieved by rest. It is at its worst on first movements after a period of rest; with continued movement it eases off for a short time and then increases again, if activity is continued. Where pain of this type is present, especially if associated with the other usual signs of inflammation, rest is indicated until the inflammation has subsided; after which carefully graduated exercises are instituted. Heat and very gentle massage help to relieve pain and spasm. Where pain of the type due to inflammation persists for long periods with a few signs of active inflammation, treatment by deep X rays again appears to be of definite value. A period of immobilisation in plaster is often of considerable benefit.

A man, aged 58, complained of pain in the right hip, which had been coming on for three years and had been severe for six weeks. The pain was continuous, though somewhat relieved by rest and the application of hot-water bottles. Examination showed a moderate osteo-arthritis of the hip, with pain on all movements, which were resisted by voluntary spasm of the muscles.

A plaster spica was applied and kept on for six weeks. Several septic teeth were dealt with at the same time. No other possible sources of infection were found. On removal of the plaster movements were rather restricted but painless. The patient was given a course of massage and assisted exercises before being allowed to get up. On discharge he could walk without pain, provided he did not overdo it, and he has remained very considerably improved.

Referred pain.—Osteo-arthritis may often cause referred pain, which may be considerably more troublesome than the pain in the joint. This is particularly liable to happen in osteo-arthritis of the spine, especially when associated with fibrositis. It may also happen with other joints—e.g., the hip, when the pain may be referred to the knee. The commonest example in the spine is sciatica referred from osteo-arthritis of the lower lumbar spine, but it is also common in the cervical region, where it may be referred along the occipital nerves, causing occipital headaches; the supraclavicular nerves, where a diagnosis of rheumatism of the shoulder may be suggested; or down the brachial plexus, simulating brachial neuritis.

Treatment must depend on the state of the osteo-arthritic joint. If there is inflammation, rest is indicated; in other cases a manipulation often succeeds in abolishing the pain.

A man, aged 65, complained of severe precordial pain of over a year's duration. The pain came on in attacks lasting a variable period and bore little relation to rest or activity. No cause could be found for this in his cardiovascular system, but radiography of the spine showed gross osteo-arthritis between the fifth and sixth thoracic vertebræ. The patient then developed melæna, and a carcinoma of the stomach was suggested. No sign of carcinoma anywhere could be found. A gastroscopy, performed after he had been on a gastric diet for some time, revealed a healed gastric ulcer. His pain, however, still persisted.

A manipulation of his spine led to complete relief of the pain. The pain has since recurred to a slight extent on several occasions, but he is markedly improved.

This case is interesting in view of the difficulties of diagnosis and the site of the pain, with the absence of any definite symptoms in the spine.

Conclusion

Since osteo-arthritis is by its nature an incurable condition, conservative treatment is mainly indicated for the relief of pain. An attempt has been made to show that this pain may be due to various causes, and that success in treatment can only be achieved by first determining the cause or causes of the pain in each case, so that the appropriate treatment may be given. Since the treatment varies according to the exact cause of the pain, empirical treatment for "osteo-arthritis" as such has little chance of improving the patient's condition.

IRELAND

(FROM OUR OWN CORRESPONDENT)

HEALTH OF DUBLIN

THE annual report of the medical officer of health for Dublin during last year has just been issued. The birth-rate for the city, excluding certain births in institutions assignable to other areas, was 24·4 per 1000 of the population, the rate in the previous year being 24·7. The death-rate was also reduced from 14·9 to 13·3. This was the lowest death-rate on record. The infantile mortality-rate was 98 per 1000 births. The variations in the past 10 years have been very wide; for example, in 1936 the rate was 115, whereas in 1934 it was only 79. The medical officer of health stresses the need for breast-feeding, also the need for more antenatal and neonatal care. However discouraging the present rate may appear, there has been enormous improvement during the last thirty years. The rate in Dublin in 1900 was 175 per 1000

births, and there was little improvement until after 1915, in which year the rate was 165; from that year there was a steady drop until 1934 when the figure was 79. A remarkable drop in the mortality from puerperal sepsis is recorded—the rate in 1938, 0·4 per 1000 births, being less than 25 per cent. of the figure in 1928. On the other hand, the deaths from other puerperal conditions showed a slight increase. The death-rate from tuberculosis—pulmonary and other forms—is diminishing, but the rate of decrease has been much slower in the period since 1920 than in the two previous decades.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

GLASGOW GRADUATION ADDRESS

WHEN he addressed the graduands of Glasgow University last week Sir Hector Hetherington, the principal, said that the new graduates were going out at a difficult time, and in the last two years events had rarely allowed them to concentrate with free minds on their proper business of study and learning. He was glad that through it all so many of them had gone on quietly and firmly with their own duties and helped to maintain in cheerful vigour the normal life of the university. That was the best of auguries for the days to come. The war would make its demands on medical men as on everyone else, but they were more fortunate than most. Their part, whether in military or civilian service, would be their own chosen work of healing. They might hope to be better practitioners because of the intense experience of the next few months or years. They had a special privilege in this—that for them there would be no distinction between friend and foe. Whoever comes to the doctors' care, whatever his origin or uniform, would have the single rank and claim of "patient" or sufferer, and it was the glory of their calling that they would give their best to all. In their common service and common tradition on both sides of the fighting lines there was one of the continuous strands of that civilisation which has survived so many shocks and which would survive even this disruption.

BLOOD-BANKS

Partly in order to stimulate the enrolment of further donors the organisers of the Scottish national blood-transfusion service have introduced a system of "bank-books." Depositors of blood will be given books in which each donation of blood will be recorded. The blood given is to be carefully labelled with the name and number of the donor and as soon as it is used a certificate giving full particulars of the person to whom it was administered will be sent to the donor for pasting into his or her bank-book. Attempts are being made to interest people all over the country in forming "life-saving certificate groups." Volunteers are coming forward more slowly now than at the beginning of the war in the larger cities, but in the smaller towns, where the campaign is only now gathering momentum, the mobile testing teams are being kept busy. A large bank has been established in Edinburgh and the blood already drawn is being used for ordinary medical and surgical emergencies. The bank's reserves are to be maintained by a steady withdrawal from tested donors, only universal donors being used just now. In Glasgow a large number of donors have been tested and as soon as a decision is reached as to storage an adequate bank will probably be established.

NEW GOVERNMENT BUILDINGS

The new Scottish Government buildings, built on the Calton Hill, Edinburgh, on the site of the old Calton prison, have been opened. Some months ago a vigorous discussion took place in the Scottish papers regarding a name for the buildings, and "St. Andrew's House" was finally decided upon. All headquarters divisions of the Department of Health for Scotland are now to be accommodated in the new premises, thus grouping under one roof the various branch offices which have been scattered over the city.

MEDICINE AND THE LAW

Value of a Finger

WHAT is the proper sum to compensate a young woman for the loss of two joints of the second finger of her right hand? In Henderson *v.* Clifford Watmough & Co. a factory worker, aged 17, had suffered injuries which made amputation necessary. Her employers, sued for damages for negligence, admitted liability. The amount of the damages for her injury, including the pain and suffering and the permanent disfigurement, was for the county court judge to decide. He awarded £85 (including £10 for special damage). The plaintiff asked the Court of Appeal to declare the amount so small as to be an entirely erroneous estimate. The appellate court expressed no opinion on the point and merely said it could not interfere inasmuch as the County Court Act allows appeals only "in point of law." Lord Justice du Parcq said that the principles of law required the county court judge to take into consideration certain well-recognised kinds of damage. There was nothing to show that the trial judge had failed to comply with this duty. If the sum of £85 were, for the sake of argument, inadequate compensation, the judge's mistake was not necessarily one "in point of law." The quantum of damages was a question of fact. In such a question the Court of Appeal had no jurisdiction to intervene.

It has been commonly said among lawyers that judges sitting without juries (under the recent policy which discourages jury trials because they prolong the duration of a case) have proved even more generous in their pecuniary awards to injured plaintiffs than juries ever were. Possibly no two judges would have given Miss Henderson the same amount. Which would she sooner have to-day—her right hand intact or £85 in cash?

The Lancet 100 Years Ago

October 5, 1839, p. 60. From a leading article.

Since the introduction of vaccination a mild and inoffensive complaint has been substituted for a loathsome malady; the mortality of small-pox has been diminished by one-half; and three years have been added to the span of human existence. These are in themselves sufficient advantages to render vaccination what we have frequently termed it in the pages of this Journal, the greatest boon which science has conferred upon mankind. But man, after all, is a frail and miserable machine. The seeds of decay and death are innumerable. We may defer the fated hour for a few short months—for a few years—but that body in which we now carry ourselves so proudly must return to the dust whence it sprung, and be dispersed by the winds of Heaven, we know not whither. Vaccination cannot render us immortal; like every other human discovery, it has its imperfections, and we only deceive ourselves and deteriorate, in public estimation, its real value, by an attempt to overrate the benefits which may accrue therefrom.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A POITRINAIRE

I

ONE advantage, or so my friends told me, of a spell of enforced idleness is the extra time available for non-medical reading. And so it seemed to one who had tried too slavishly to keep abreast of the current literature in his own specialty and to maintain at the same time an intelligent interest in the advances in other branches of medicine. But alas! good intentions of improving the mind and becoming a "man of culture" have been largely frustrated; for I found that a mental and physical laziness had descended upon me and during the first few months here I was content to vegetate—to eat and to sleep and, like the old lady, sometimes to lie and think and sometimes just to lie. Then, too, the hospital routine quickly takes a hold and it is amazing how occupied one can be doing little or nothing. As hospitals go, they are kind to us here. Our day begins at 7 A.M. with pulse and temperature readings, followed by the morning ablutions, bed-making, a visit from sister and a glance through the newspaper before breakfast at 8.30. After performance of the natural functions, there follows a detailed perusal of the day's news from the "hatches, matches and dispatches" on the first page to the "desirable residences" on the last. It is one of the penalties of the idle life that in these days of recurrent crises and wars there is ample time to read all the depressing news. One tries, of course, to evade the issue by beginning with the fourth leader—just as one reads first "Grains and Scruples" or "Tonics and Sedatives"—going on to the correspondence columns where admirals, bishops and lords of the realm love to air their views, sport (with special attention to Bernard Darwin on Saturdays), and general news until finally one is forced to tackle the august first leader. And now let me air another grievance. Why must we have a spate of reading-matter at the week-end? Mine includes *Picture Post* (now published on Wednesday), a real pictorial-news paper and ideal for the practitioner's—if not the consultant's—waiting-room; the *Spectator*, the best guinea's worth in the newspaper market; the *Listener* because I am more eye-receptive than ear-receptive; the *New Statesman* to counteract the conservative elements, and two medical weeklies. The result is that a week-end which should be given over to the family and a game of golf is spent—or mis-spent—in an arm-chair reading, reading, reading.

* * *

To return to the sanatorium and the daily routine. At 10 o'clock work begins; patients who are up all day and on "rounds" have first to clean the vegetables and the daily prayer is that it won't be onions; "graders" are sent to their various jobs of work by the head-gardener, while bed-patients wait expectantly for the doctor's visit, trying the while to think of something bright and chatty. Afterwards, two or three forgather, the latest hospital news is handed round and we hear for perhaps the hundredth time the sad tale of this one's A.-P. or that one's "thoro"; for men in hospital are even greater gossips than women and, being mortal, love to dilate on their own disabilities. At 12 noon the first rest-hour begins, when one may read but neither talk nor write nor even listen to the radio. Lunch at 1.15 is followed by the second rest-period at 2.30, not applicable to "graders," and disturbed for bed-patients by more washing and tail-rubbing. Work stops at 4.30 when we queue up for a welcome mug of tea, and the last rest-hour begins at 5.15 to be broken by evening P.'s and T.'s and the surreptitious switching-on of radios for the 6 o'clock news. Supper at 6.30 is followed by another doctor's visit and the rest of the day is our own until 9 P.M. But there are the Fol-de-rols, Band-Waggoners, Music-Hall and the Proms to while away the evening, bridge and solo schools do a flourishing trade, while the more industrious among us are busy with rug-making or tapestry work. So you see how difficult it is to settle down to the business of improving the mind.

* * *

Sanatorium patients usually have the reputation of being inveterate grousers. The reasons are fairly obvious. Take a wardful of 20 men in the prime of life, suffering from a chronic but not grossly incapacitating disease, with minds and bodies unoccupied, under a rather irksome discipline and on a diet not distinguished for its variety or attractiveness, add one or two chronic malcontents, and you have all the ingredients necessary for a small rebellion. Here, things are done differently, and my first and abiding impression was, and is, the cheerfulness of the patients.

What is the recipe? First, the wards accommodate no more than 4, 5 or 6 beds, and patients who are likely to be in bed for a long time are given single cubicles; second, the proportion of bed-patients seldom exceeds a third of the total; third, the patients are mostly working-class with a leavening of the professions which on one side ensures a fair standard of general behaviour and on the other prevents snobbery; and last and most important, there are few idle hours. For here was born occupational therapy for the tuberculous, sired by Marcus Paterson and brought to manhood by his successor. From the time he is allowed up six hours, the patient has more or less to fend for himself; he makes his own bed, tidies his room, and washes up his crockery. When up all day he helps with the vegetables and is given one "round" (half-a-mile's walk morning and afternoon); on successive weeks the number of rounds is increased up to eight, provided that by the deceleration-of-pulse test the patient is found to be fit for the extra exercise. He then passes on to the various grades of work: grade 1, picking up and carrying weeds &c., 2, hoeing and sweeping, 3, digging and wood-chopping, 4, felling and sawing trees, each grade being calculated to bring a different set of muscles into action. For the leisure hours there are the usual recreation rooms and such outdoor "sports" as croquet, clock-golf and pitching and putting. Besides which, a committee of patients with president and secretary make provision for other amenities—distribution of newspapers and the early morning mug of tea, supplying bed-patients with their wants from the sanatorium shop, promoting whist-drives, spelling-bees, &c.—and in a general way help to maintain discipline and harmony in our little community.

It is significant of the value of occupational therapy that many of the men, with little taste for reading or letter-writing, find Sunday the only tedious day of the week. For the same reason in the outside world, the Sunday newspaper has become immensely popular and the ordinary citizen seldom buys less than two of these to help pass the hours of ennui. The general cheerfulness and friendliness here is a great tonic to the newcomer and is in striking contrast to the bored expressions to be seen at sanatoria where the patients are allowed a greater "freedom." And yet I frequently heard paying patients at the Brompton say they didn't want to go to —— because the men there were made to work. It is easy to point the moral for the great army of the unemployed. What physical and moral deterioration idleness breeds, and how unwilling have our leaders been to follow the splendid examples of the American Civilian Conservation Corps and the German labour camps! I have seen the former and have had first-hand information about the latter, and there is no doubt about the tremendous benefit they have brought to the youth of their respective countries. Perhaps the newly founded militia—or "belitiamen" as the little girl in *Punch* called them—would have helped to remedy this evil in our midst by giving the unemployed man a chance to savour the advantages of an occupied and disciplined life. Now instead, war and general conscription will have to tackle the job.

* * *

Sept. 30. We all, save a handful of bed-patients, have been evacuated. After the excitement of the removal, I find myself in the wilds of Aberdeenshire where the sight or sound of an aeroplane even now brings work to a standstill. News of the war has displaced the weather and is discussed by the local worthies in a very personal fashion, as if Hitler himself were doing mortal combat with the Poles. An even more absorbing topic for conversation is the evacuee. Stories abound of raids on the farm-yard livestock and orchards, of lousy heads and drunken brawls, but my impression is that most of the children are clean and tidy and happy to be in the country; there is little doubt but that their stay if of any duration will be doubly beneficial. It is otherwise with the mothers who seem bewildered and unhappy at their sudden transplantation from the east end of Glasgow to the quiet countryside. Many of them have already returned home and it is obvious that the impact of the slum-dweller upon the countryman has been a little too much for both. Love and understanding of the country must be imbibed early in life.

PUBLIC HEALTH

Treatment of Evacuated Children

THE Government's arrangements for the medical treatment of evacuated children apply only to children unaccompanied by their parents. The capitation fee is 10*s*. a year for each child and will cover attendance and medicines. The basis for the disbursement of the fund will be decided by the local emergency committees. In districts where chemists undertake insurance dispensing it is not always convenient or possible for the dispensing to be done by the doctor, and insurance committees who are participating in the administration of the scheme will arrange for doctors to issue prescriptions either on special forms or on ordinary forms with the name of the local emergency committee or bureau stamped on them. These prescriptions will be dispensed by insurance chemists and payments will be made to the chemists by the local emergency committees, who will recover the cost of the prescriptions from the doctors who issue them. Where a practitioner normally dispenses for his insured patients he will be expected to supply medicines to the children. The National Association of Insurance Committees has suggested to the Ministry of Health that the scheme ought to be extended to children who are accompanied by parents.

A New Occupational Risk

According to Twort and Lyth[1] several fishermen have contracted skin cancer after handling tar used for the preservation of fish-nets. Samples of this tar, together with others used as fish-net preservatives, have been studied in the cancer research department of Manchester University. The tar of which complaint had been made was manufactured in a horizontal retort at a temperature of 1100° C. It was highly carcinogenic for mice, 75 out of 100 bearing malignant tumours after bi-weekly applications of the tar for forty weeks. Three other tars were also carcinogenic for the skin of mice, but one, said to have been made from oil pitch and light-tar oils, was less so than the others. It appears that with coal tars the retorting temperature plays a big part in determining their carcinogenic powers and probably also their preserving properties. It is possible that by a process of oxidation, and the use of suitable solvents, a tar product might be produced which possessed good preserving powers although non-carcinogenic. Hopeful experiments in this direction have been carried out at Manchester University. Twort and Lyth recommend that if gas tar as such is to be used for preserving fishing nets, it should be made in vertical retorts at as low a temperature as is practicable.

1. Twort, J. M., and Lyth, R., *Nature, Lond.* Sept. 2, 1939, p. 446.

Nature calling in the Shelter

Air-raid shelters and trenches have been excavated in places frequently at a distance from public sewers and doubtless often well below the level of the nearest sewer. Yet the people taking refuge in them will not, like people locked in rooms for hours in detective stories, be immune from the needs for evacuation of an unofficial kind. Lavatories must be provided and must, of necessity, be very different from those usually approved by public health authorities. Water-borne disposal would be dependent on power-driven pumping systems which might fail during a raid, and the cascading of clean water from damaged flushing mains would cause great inconvenience. Sanitary difficulties will also arise in rural districts thanks to the large increases of population.

Clay[1] of the London School of Hygiene and Tropical Medicine has recently considered sanitation and A.R.P. He favours the chemical closet for shelters and trenches. It undoubtedly has great advantages. The dissolution and sterilisation of fæces and urine by the caustic alkalis used is a simple and thorough if rather expensive means of disposal. For public shelters and trenches the form discharging into a soak-away, with anti-splash appliances, is best. For rural sanitation the oil-covered type is probably preferable.

1. Clay, H. H., *J. Roy. San. Inst.* 1939, **3**, 128.

He suggests 50 feet as a maximum distance between closets in trenches. Where chemical closets are not practicable, latrines of the sewage-to-soil type are recommended, not container-type earth closets. Ventilation by dual-purpose manholes which can be opened from inside is suitable. Trench floors must be kept dry; absorbent hard core draining to soakaways under water points is a suitable covering, and a drainage point is needed at the foot of each entrance ramp.

For permanent camps chemical closets are best; in temporary camps latrines will usually be preferable and Clay recommends the bored latrine constructed with a large 16-inch auger rather than the more usual trench. He advises boring some 20 feet into the subsoil and stresses the importance of suitable siting, bearing in mind flow in the soil. Clay districts where the water-level in winter is only a foot or so beneath the surface offers difficulties. The use of precipitants such as ferrous sulphate and lime will greatly decrease the difficulty of disposal of soilage water from bath and wash-up sinks.

It seems we must return to the primitive state of affairs where even the smallest community is a self-contained unit, capable of dealing with its own excretions as if nothing was "laid on." In future, "no modern conveniences."

OBITUARY

JOHN LYNN-THOMAS

K.B.E., C.B., C.M.G., F.R.C.S., F.A.C.S.

AT the age of 78 Sir John Lynn-Thomas died on Sept. 21 at his home in Llechryd, Cardiganshire. He will be remembered for his highly individual and friendly personality and for his good work. In his heyday he was one of that small group of "provincial" surgeons—Rutherford Morison, Moynihan, Stiles, and Robert Jones—to whom the United States looked for surgical leadership in this country.

Elliott & Fry.

The son of a farmer, Evan Thomas of Llandyssul, Cardiganshire, he refused the succession to his father's farm and decided to be a surgeon. After apprenticeship to a practitioner he went to the London Hospital, and distinguished himself by winning the Hutchinson prize for an essay on fractures of the skull. He was house-surgeon in 1887 and then went back to Wales to spend three or four years as resident at the Cardiff Royal Infirmary. Appointed thereafter to the honorary staff he became the first consulting surgeon in Cardiff, achieving a particular reputation for the surgery of the thyroid and prostate. In 1900 he went to South Africa with the Welsh Hospital and he was in charge of it before the war ended, being created C.B. for his services. On going back to Cardiff he was a notable figure in the life of the city, and in 1907 he was high sheriff of Cardiganshire. The war of 1914 found him with a reputation already made and this was enhanced by his work as consulting surgeon to the Western Command and then as deputy inspector of military orthopædics. Throughout his active career he was a general surgeon in the true sense, and it was his wide range of interests that enabled him to give invaluable support to Sir Robert Jones in organising the military orthopædic department of the Army medical services. Lynn-Thomas and Robert Jones had been close friends for many years; they had taken many holidays together on the Continent. During his time with the Western Command, Lynn-Thomas had soon become convinced of the need for the segregation of potentially crippled soldiers in special hospitals. In Cardiff he was primarily responsible for the establishment of the Prince of Wales Hospital, which, beginning as a hospital for limbless soldiers, later became a complete orthopædic unit. After the war he used his powerful influence to make this hospital a permanent orthopædic centre for South Wales. He also gave much help to the Royal Infirmary and other local hospitals, and to the Welsh National School of Medicine, whose establishment he had long desired and advocated. In the University of Wales he was for a time deputy chancellor.

In 1917 Lynn-Thomas was made C.M.G. and in 1919 K.B.E. He retired from practice in 1921, but he was still attached to medical affairs and was a member of council of the Royal College of Surgeons from 1918 to 1933.

During the post-war years the younger orthopædic surgeons found great enjoyment in their contacts with him. His complete absence of "side" and his entertaining conversation made him a centre of attraction at meetings of the British Orthopædic Association. He had a large head, and a great shock of hair; no-one could fail to notice him in a crowd; and if he was often combative he was generally forgiven because of his candour and simplicity. Among the marks of professional recognition he received and enjoyed were the honorary fellowship of the American College of Surgeons and the honorary licence of the Society of Apothecaries of London, conferred in 1931.

Sir John Lynn-Thomas married Mary, daughter of Edward Jenkins of Cardiff, in 1892. Their only son died in 1928, and Lady Lynn-Thomas last year; so the only survivors of the family are two daughters. In his last years he lived as the squire of Llwyndyrys, an old house in Llechryd. He found excitement and romance in its history and in the excavations he made around it, and the results of his archæological researches were woven into two books. The house and grounds, it was announced last spring, were to be left to the University College of Wales at Aberystwyth so that his inquiries might be further pursued.

LEONARD GRANT

M.D. EDIN.

Dr. Grant, who died on Sept. 6 at the age of 79, was a son of James Dundas Grant, advocate, of Edinburgh. He was educated at the Edinburgh Academy and the College of Dunkirk, studying medicine at the London Hospital and Edinburgh

University, where he qualified in 1881 and took his M.D. four years later. After graduation he was resident at Queen Adelaide dispensary, then at the West London fever hospital during the great epidemic of smallpox, and as clinical assistant at the Central London Throat and Ear Hospital he added to his usefulness. Being thus equipped for general practice, he settled at New Southgate and married Louisa Wade; they had a son, who was killed at Loos while acting as surgeon to the London Scottish, and four daughters, two of whom mitigated the last years of his life when in addition to disease of the coronary arteries he was afflicted with blindness. His store of whimsical humour was a surprise to the many old friends whom he delighted to welcome up to the last. Among his other fields of usefulness was the Passmore Edwards Hospital at Wood Green, to which he was consulting medical officer, and the auxiliary military hospital at Tottenhall. He was keenly interested in Epsom College. A good family doctor and friend, and a good citizen.

LAURENCE JOHN HONEYWILL

M.B. LOND., F.R.C.S.

THE sudden death of John Honeywill on Sept. 17 from septicæmia and pyæmia, at the age of 27, came as a shock to his friends. He was one of the more brilliant students of University College Hospital, and there was every reason to anticipate for him a distinguished surgical career. He entered the medical school in 1933 with a Goldsmid exhibition. He later shared the Magrath clinical scholarship and won the Atchison scholarship awarded to the student who "has shown the best work and greatest proficiency as a student of the medical school and hospital." In 1937, he took his F.R.C.S. England and last year his M.B. London with the university gold medal and distinction in surgery and obstetrics. Since qualifying in 1936 he had been house-surgeon, house-physician and casualty surgical officer at U.C.H. He leaves a widow and a daughter born six weeks ago.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

BY MEDICUS, M.P.

WHEN Parliament rose in August last the total expenditure authorised for the year was £1453 million, of which £502 million was to be borrowed. On Sept. 3 "when we found ourselves at war," to use the Chancellor of the Exchequer's phrase, a note of credit for a further £500 million was adopted. In this year we are therefore facing a two billion budget and in the years to come the amount will rise. These gigantic figures were received by the House of Commons as the inevitable price we must pay in support of our cause without either resentment or objection; the first reaction was in fact the kind of laugh men give when going "over the top." For indeed this is the whole nation going into action. The biggest income-tax ever known, increased surtax, increased death duties, increases on beer, wine, whisky, tobacco and sugar, an excess-profits tax, and a levy to take place after the war on the increase of wealth during the war, were accepted as inevitable. But many income-tax payers will be glad of the proviso that enables them to elect to be assessed on the current year rather than on the previous year. We may well imagine Hitler saying, to paraphrase an old story, "I don't know how it affects Great Britain, but by God it terrifies me."

The budget means great changes in the lives of all of us, a scaling down of the standard of living of many, and we may hope, with the new distribution of urban population in the rural areas, a scaling up of the standard of living of very many of the people who have been at a level too low for health and efficiency. And with it all the financial strength of Great Britain remains that of a fortress, "the pound sterling remains, when all is said and done, an accepted medium of international exchange." Whereas "the German mark has no position as an international currency," and fears that it may repeat its catastrophic depreciation of 16 years ago press on the German mind. With these observations Sir John Simon ended his budget statement, adding as his last sentence words which are a sober statement of the nation's aims: "If the price of victory be high, it is a price worth paying, for it is the price of liberty and of all that makes life worth living for Europe and for ourselves."

The Chancellor's budget statement was made on the Wednesday, and something of the good reception which it received may perhaps be placed to the credit of the First Lord of the Admiralty, Winston Churchill, who on the previous day had made a tonic speech which raised the enthusiasm of the House to a high level. At the conclusion of Winston's great story of the naval power of this country M.P.s cheered and cheered again, and then gave him a second round; in a long experience of Parliament I had never heard the like. No doubt of it, by that one speech Winston Churchill raised himself to a higher stature than he had attained before.

* * *

So the great events defile before the House, and so the lesser events follow them: the story of confusion in the food-distribution schemes under Government control, the grotesque story of the 999 members of the Ministry of Information of whom only a negligible number were journalists but one came from a museum and many from various Civil Service departments—as one member asked plaintively in a supplementary question, "What do they do with all the information they have got?" The Ministry of Health and the Board of Education are grappling strenuously with the organisation of the new life in the reception areas. The Ministry of Health have just issued a circular stressing many points of importance, and among them urging the need for the town evacuating authorities to coöperate with the rural (or semi-rural) reception areas by lending their medical and nursing staff. The Ministry are ready to smooth away all financial difficulties, and if rooms or other premises have to be hired in the reception areas for clinics or similar purposes, then the Ministry will pay 100 per cent. of the cost. The need for increased maternity-home accommodation still requires careful scrutiny and to all these medical matters the House will give great attention. The Government are of course in charge of the ministries, but the Opposition have created a series of committees of action for the purpose of considering and constructively criticising proposals the Government puts forward. It is a new form of constitutional activity, but it does not rule out stern criticism if required and searching questions. Who, for example, is really responsible for the many paid

appointments made to the Ministry of Information which are now to be cancelled? There is need for parliamentary opposition now as well as in times of peace.

FROM THE PRESS GALLERY

The War Budget

IN introducing his first war budget in the House of Commons on Sept. 27 Sir JOHN SIMON said that when he opened his last budget at the end of April, the estimated expenditure of the year amounted to £1,322,000,000 including defence expenditure totalling £630,000,000. The budget proposals were calculated to raise £942,000,000 from revenue and £380,000,000 was left to be borrowed within the financial year. But by July defence expenditure had grown to at least £730,000,000, and when Parliament rose in August the total expenditure was £1,453,000,000, of which £502,000,000 was to be borrowed. On the outbreak of war a vote of credit of an additional £500,000,000 was adopted, and he could not guarantee that that credit would be sufficient up to March 31 next. The revenue from existing taxation was not likely to exceed £890,000,000. It was necessary to propose additional taxation both because the Government must gather in by that means the largest possible amount to help war expenditure and because that course helped to secure that the spending power in the hands of individuals was not used for unhelpful purposes.

Coming to his new taxation proposals the Chancellor began by announcing that the standard rate of income-tax would be raised from 5*s.* 6*d.* to 7*s.* 6*d.* in the pound, subject to reconsideration later, and that in the present year the rate would be 7*s.* A concession would be given to taxpayers who proved that they had experienced this year a substantial loss of earned income. If a taxpayer showed that his directly assessed income this year had been reduced by circumstances connected with the war below the figure of assessment by as much as 20 per cent. he would be entitled to substitute this year's actual income for last year's as the basis for assessment. Adjustments would be made in allowances which with one exception would not come into operation until next year. The exception which would be applied at once was that instead of the first £135 of taxable income being charged as at present at 1*s.* 8*d.* the charge would be 2*s.* 4*d.*; while next year, if the standard rate of tax was 7*s.* 6*d.*, the rate would be 3*s.* 9*d.* But there would be a provision increasing the reduced rate zone which was now £135 to £165. Earned income allowance which was now one-fifth, with a maximum of £300, would be one-sixth, with a maximum of £250. The allowance for married persons would be £170 instead of £180 and the allowance for children £50 instead of £60. The sur-tax payer, who was subjected to a 10 per cent. increase in 1931 and a further increase last April, would suffer a still higher scale. The rates would run from 1*s.* 3*d.* at £2000 to 9*s.* 6*d.* for incomes over £30,000. Estate duty on estates exceeding £10,000 but not over £50,000 would be increased by 10 per cent., and on estates over £50,000 the increase would be 20 per cent. The maximum rate of estate duty on the largest estates would thus be 60 per cent.

In the sphere of indirect taxation Sir John Simon called for further contributions from the consumers of beer, spirits, wines, tobacco and sugar. The extra duty on beer, he said, would be equivalent to 1*d.* a pint and on spirits 10*s.* a proof gallon, equal to an increase in the price per bottle from 12*s.* 6*d.* to 13*s.* 9*d.* The increase on light wines and British wines would be 2*s.* a gallon and on imported heavy wines 4*s.* The rise in the tobacco duty would amount to 2*s.* a pound, with corresponding increases on cigars. An addition of 1*d.* a pound would be made to the sugar duty. Lastly, the Chancellor announced the intention of the Government to introduce an excess profits duty on the model of the armaments profits duty applying to trade and industry generally. The question of a levy on war-time wealth was also being considered. The increases of taxation involved in this new budget amount to £107,000,000 this year and will rise to £226,600,000 next year.

Sugar

On consideration of the additional tax on sugar Mr. PETHICK-LAWRENCE said that the burden of this tax would fall very heavily on the lowest classes in the community. The Chancellor had given no indication that old-age pensioners, working-class families on a very low wages scale, or the unemployed would receive any compensation to meet this additional cost on the necessities of life.—Sir JOHN SIMON said he did not think it would be right that our indirect taxation should be limited simply to the people who smoked and drank. It was inevitable that he should choose some mode of contribution which, while it called for sacrifice, covered every sort of home. The greatest possible efforts were being made by the Government to restrain rises of prices. It was true that at the lowest end of the scale there were people to whom this addition was quite serious. It was also true that the imposition of such a duty did minutely increase the cost of living, he thought by about 1·6 points.—Sir FRANCIS FREMANTLE said the medical profession would be opposed to anything which diminished the nutrition of the people, and especially of the poorest classes who were the most ill-nourished. It had been suggested that the average incidence of this tax would be an extra twopence a week. He thought that the average among the poorer classes would be a good deal less than that figure. He asked the House to consider what proportion of the sugar consumed was devoted to real nourishment and what was used for amenity purposes, or was actually used in a way which was deleterious. Sugar was largely used in the manufacture of confectionery as well as in the beer industry. Confectionery was very largely used even by the poorest children and the poorest people. The medical profession were united in an effort to try to save the health of the people by saving their teeth. It was the dental cavity which was at the root of rheumatism and innumerable troubles, and all those associated with public health in local government had been seeing to what extent they could extend the dental services, and had regretted that those services had not yet shown how to prevent cavities. Enormous damage was done to children by confectionery. It was the constant sucking of sweets and leaving the residue in and around the roots of the teeth that was so detrimental. Therefore, while he did not doubt that this tax would fall heavily even on those who confined the use of sugar to nutritive purposes, he thought the burden would be very slight for the majority.

QUESTION TIME

SEPT. 27–29

Petrol Ration for Doctors

Mr. DE ROTHSCHILD asked the Secretary for Mines whether he could now make a further statement regarding the issue of supplementary petrol rations to doctors, especially in the case of doctors living in scattered country districts far from a hospital, where the population had been increased by the influx of evacuated persons.—Mr. LLOYD replied: In view of the varying requirements of some 45,000 doctors it was necessary to make a first issue of supplementary rations on a provisional basis. Individual cases are now being examined by the divisional petroleum officers in consultation with representatives of the British Medical Association with a view to ensuring that the essential requirements are met.

Calling-up of Undergraduates

Sir THOMAS ROSBOTHAM asked the Minister of Labour and National Service, if undergraduates at the universities would be allowed to finish their terms before joining up for

training and, if so, what course should they adopt to secure postponement.—Mr. ERNEST BROWN replied: The undergraduates who are at present liable to be called up under the National Service (Armed Forces) Act are those who had reached the age of 20 and had not reached the age of 21 on June 3 last. The postponements granted to them under the Military Training Act have been cancelled, but they will have an opportunity of applying for postponement on the ground of exceptional hardship when called for medical examination. I should add that all undergraduates are being given the opportunity to apply to the joint university recruiting boards for assessment of their suitability for commissions in the Armed Forces of the Crown. Following such applications, they will be interviewed by the boards or, if they possess certain scientific and technical qualifications, by special technical committees attached to the boards, which will in suitable cases advise that they should be allowed to complete their university course.

Ministry of Information Staff

Sir E. GRIGG (Parliamentary Secretary to the Ministry of Information) informed Sir SMEDLEY CROOKE that the staff at headquarters of the Ministry of Information, and in the regional offices of the Ministry, included 388 civil servants, 50 officers of the fighting services and 43 professional journalists. Nearly half of the number employed consisted of clerical, typing and messenger grades, and the news and censorship divisions, which accounted for 433 persons in all, were working on a three-shift basis covering the full 24 hours a day. This, of course, necessitated a proportionately larger staff.

Sir FRANCIS FREMANTLE: Can my hon. friend say whether some of the journalists include those connected with the technical press, especially the medical press, who would be of immense value to the Ministry of Information?—Sir E. GRIGG: I must ask for notice of that question.

Gas Masks

Mr. ELLIS SMITH asked the Home Secretary what steps had been taken to examine gas respirators; what was to be the procedure for the future in order to maintain and be sure of their efficiency; what proceedings had been taken against persons not carrying a respirator; and under what powers had such proceedings been taken.—Sir JOHN ANDERSON replied: Local authorities have been advised, since the general distribution of respirators was made, that they should arrange for periodical inspection of respirators in the hands of the public. As regards the last part of the question, there are no such powers.

Helmets for Babies

Mr. ELLIS SMITH asked if he was aware of the concern over the lack of respirators for young children and babies, and a circular issued by a county chief constable advising mothers to take their children to an upstairs room and ensure that every door and window in the house was locked; what steps were being taken to expedite delivery; and on what date was it expected that there would be supplies for all.—Sir JOHN ANDERSON replied: These protective helmets are being distributed rapidly, but they cannot be issued to all areas simultaneously and the more vulnerable areas are being supplied in priority. I have seen the circular to which the hon. member refers, and the precautions which it recommends would in my opinion be appropriate in any contingency in which the special protective device was for any reason not available.

Evacuated Hospital Patients

Miss RATHBONE asked the Minister of Health whether any systematic review had been, or would be, made, through the hospital or medical authorities or otherwise, of all the cases evacuated from hospitals to their homes at the beginning of the war, for the purpose of ascertaining whether they were receiving adequate medical and nursing attention.—Mr. ELLIOT replied: All hospitals have been instructed to provide inpatient treatment for all in need of it, and if the medical advisers of patients requiring hospital treatment give a certificate to this effect, the patients should be able to obtain admission to hospital, whether they are cases evacuated from hospitals to their homes at the beginning of the war or fresh cases. In these circumstances I do not think it necessary to call for a special review.

Feeding Centres for School-children

Mr. RIDLEY asked the Parliamentary Secretary to the Board of Education whether he was satisfied that local authorities were making adequate provision to ensure that school-children entitled to a free solid meal would continue to receive it.—Mr. KENNETH LINDSAY replied: I have no reason to doubt that generally speaking adequate provision is being made for the children in neutral and reception areas. The position in the evacuation areas is more difficult because of the risks involved in the assembling of children; but if steps are taken to limit the number of children assembled at any one time and to provide suitable protection these risks can be reduced. Certain authorities in the evacuation areas have already reopened their feeding centres with these safeguards, and I hope that others will see their way to do so.

Miss WILKINSON: Is it not a fact that there are 151 neutral and reception areas, and is it not therefore impossible for the children in the evacuated areas to be fed at school because no arrangements have been made by the Board of Education?—Mr. LINDSAY: Yes, we are urging that steps should be taken.

Cheap Milk

Mrs. ADAMSON asked whether local authorities would operate a scheme for the provision of cheap milk to those children now remaining in the evacuated areas who previously received it whilst at school.—Mr. LINDSAY replied: I should welcome a scheme under which children remaining in the evacuation areas could continue to receive milk under the milk-in-schools scheme. There are, however, a number of practical difficulties—for example, as to the places at which children would be assembled for this purpose and the number who can safely be collected together—and until the question has been further explored I am not in a position to make any definite statement.

Mrs. ADAMSON: If the local authorities can make satisfactory arrangements, will they be allowed to go on with their schemes?—Mr. LINDSAY: We are exploring at this moment with the Milk Marketing Board and other interested parties methods to satisfy the needs of the evacuation areas.

Miss WILKINSON: If the children are gathered together for education in certain numbers, what is to prevent them from receiving milk in those numbers?—Mr. LINDSAY: Nothing, but unfortunately they are not banded together.

Teeth of Evacuated School-children

Mr. MCGHEE asked whether any arrangements had been made for the provision of school dental treatment for evacuated school-children in reception areas.—Mr. LINDSAY replied: The receiving education authorities are responsible for the working of the school medical service (which includes the school dental service) for evacuated children. It is earnestly hoped that these children will be given the same facilities for dental treatment as are available for children who ordinarily attend schools in the receiving areas.

Health Visitors in Reception Areas

Mr. PARKER asked the Minister of Health what steps had been taken to augment the number of health visitors in the reception areas; and whether any had been transferred from the service of the local authorities in the evacuated areas.—Mr. ELLIOT replied: Steps for augmenting health visiting staffs are primarily a matter for the welfare authorities in the different areas to decide upon, having regard to local needs. I propose to issue a circular giving advice to welfare authorities. I have at present no particulars showing to what extent health visiting staffs have been transferred from evacuated to reception areas.

Care of Expectant Mothers

Mr. THURTLE asked the Minister if he would see that arrangements were made by the billeting officers or other authority responsible for regular visits to be paid to expectant mothers who had been evacuated to reception areas, in order that the special needs of these mothers might not be overlooked.—Mr. ELLIOT replied: The normal public health services include the organised visiting of

expectant mothers, and I am taking steps to ensure that such services are available in reception areas for evacuated women as well as for the ordinary population.

A Tribute from the Minister

Replying to Sir R. GLYN, Mr. ELLIOTT said he would like to pay a tribute to the vigour and good will with which the receiving areas were tackling the evacuation problem, and to assure them that both in administration and in the development of policy their representations, notably on the difficulties of the reception of adults and the necessity for adequate medical examination of evacuated school-children, were receiving full weight.

Overcrowding in Scottish Reception Areas

Sir THOMAS MOORE asked the Secretary of State for Scotland whether, in the case of people who were receiving evacuees, local authorities were still enforcing the regulations against overcrowding; and whether he would consider suspending such regulations during the duration of the war.—Mr. COLVILLE replied: The standard of accommodation recommended to local authorities in billeting evacuated persons is generally more favourable than the overcrowding standard.

Burning Pit Heaps

Mr. LESLIE asked the Home Secretary what progress had been made in the elimination of burning pit-heaps in mining areas.—Sir JOHN ANDERSON replied: Burning pit-heaps are visited frequently by inspectors of the Ministry of Health and of the Department of Health for Scotland with a view to ensuring that the measures taken for quenching the fires are adequate. Substantial progress has been made in the mining areas as a whole, and the latest reports show that in England fifty-five heaps, which were emitting some considerable glare, have been treated and are no longer openly on fire.

LETTERS TO THE EDITOR

CONFLICTING EMOTIONS

SIR,—I have been watching sympathetically the reactions of some of our consultants to the tension of the last month, and reliving again the emotions of exultation, deflation, exasperation and financial anxiety many of us felt in similar circumstances in the last war. When the present war broke out we were led to expect furious air attacks on our great cities, and the Emergency Medical Service was rapidly improvised specially to provide against that contingency. So far the lightning attacks have not happened. The improvised hospitals are empty. Their staffs in consequence are standing by idle, and, instead of feeling grateful for the respite, many who rushed in enthusiastically are now almost angry that nothing has occurred to make their services necessary—all very human and very illogical.

There is much grousing about the terms of service, complaints of square-pegging, complaints of inefficiency in high places, complaints of lack of equipment—much destructive criticism but little constructive help. Of course the terms of service are quite inadequate for anyone with the "overheads" of the Harley Street area; but are we not much better off in this respect than the members of the Stock Exchange, the proprietors of the big empty hotels and restaurants, the unfortunate people who run theatres, even the Bloomsbury lodging-house keepers who formerly catered for our medical students?

Of course there have been cases of bad staffing and inefficiency. Good men have been passed over for inferior ones. Men who think their experience in the last great war might have been useful have found themselves ignored. That is inevitable in any great improvisation. Also lack of equipment in one place, overplus in another, was bound to happen. But let us be thankful we have had time to find out these defects, and so been given a chance to remedy them before the inevitable attack comes. The framework of the emergency service has stood the test. It is the details that require overhaul. The closing down of both inpatient and outpatient departments of the great hospitals has been found to be a mistake. That is being remedied. Shutting up the special hospitals was a great blunder. The staffs of some that refused to have their outpatient departments closed now find themselves working overtime at hospital. Many of these are not on salary and consequently are rather inclined, perhaps a little unfairly, to resent the grumbles of their brethren living in outlying sector hospitals receiving Government pay for doing nothing.

This war is going to be a long war, and what we all have to face is that everyone in the country will be the poorer for it. But as a profession we are fortunate in that everyone of us will be necessary, everyone will be required for service. We shall not suffer from that feeling of futility so many of our friends in other professions experience, for we are indispensable, and in this lies our privilege.

I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM.

Queen Anne Street, W.1, Oct. 2.

SIR,—There must be many who saw some combatant service in the last war and who would face the same ordeal again in the present cause, but who shrink from contemplation of a repetition of the ghastly results of our last blockade on the infants and children of Central Europe. Our blockade is just and necessary, but it is permissible to hope earnestly that those organisations in neutral countries that rendered medical aid on the last occasion to these stricken children will set their machinery in motion to render the same aid again at the earliest moment that it is required.

I am, Sir, yours faithfully,

Oct. 1. M. C. WILKINSON.

HICCUP IN OBSTRUCTION

SIR,—The following case is an example of intestinal obstruction in which the clinical picture was in some ways contradictory to the findings on laparotomy.

Mrs. P., aged 30, three months pregnant, had had a uterine suspension and appendicectomy nine months previously. She had an attack of abdominal pain localised about one inch to the right of the umbilicus. With this came diarrhœa, followed by constipation, without the passage of flatus. Vomiting started with the pain, and persisted for 48 hours, by which time the vomit was green. Hiccup began after 24 hours and persisted. Two enemas were returned without result. Temp. normal; pulse 80. Tongue moist. Abdomen a trifle full, but not more than could be accounted for by the easily palpable uterus, with local tenderness at the point where pain was complained of. Absence of distension suggested high small-bowel obstruction and persistent hiccup suggested peritonitis. At the same time her general condition was good, and there was no other evidence of peritoneal inflammation. Laparotomy showed obstruction of small bowel due to an adhesion in the right iliac fossa, which tore through on attempting to deliver the bowel. The raw area on the surface of

the bowel was covered over and the bowel returned. There was a large amount of free fluid in the abdomen. The patient was smiling next morning and never looked back.

If hiccup had not been present it is doubtful if laparotomy would have been done so soon. The early laparotomy was certainly lifesaving, yet the condition discovered was not as severe as the hiccup led me to suppose. I feel that it is in just such a doubtful case that the demonstration of free fluid by the detection of shifting dullness would have confirmed the tentative diagnosis.

I am, Sir, yours faithfully,

Highgate, N.6, Sept. 30. W. LEES TEMPLETON.

SIGMUND FREUD

A PERSONAL IMPRESSION

Dr. JOHN RICKMAN writes: In Professor Freud two characteristics were present in the highest degree: his friendly simplicity towards one as a human being, and the prodigious power of his mind. The combination of these qualities made one feel to be in the company of a new kind of being—an ideal for human nature. Freud accepted his transcendent intellectual gifts as a phenomenon of nature, a thing neither to be personally proud of nor of course concealed; they belonged as much to the universe as to himself. Lesser men might have used such power for their own aggrandisement, but he was immune to the temptation because his protagonists were not his fellows but the obscurities in our human nature. The confusion in man's mind was an affront to him and he set about to get to terms with his enemy. Characteristically, and here he gave a lead to his followers and to the world, he turned first to the obscurity of his own mental processes, patiently exploring that seemingly chaotic and unprofitable region—the world of dreams. He always referred to the results of this ten years of labour as a piece of good fortune that was not likely to come twice in a lifetime and seemed to be grateful to the generosity of nature for disclosing to him such valuable secrets. He gave the rest of his life, from about forty onwards, to the detailed working out and consequences of the laws he had in fact himself discovered. That such discoveries were changing the outlook of psychiatry, anthropology and sociology, giving a new understanding of the forces in art and religion, and indeed likely to change the mental outlook of the human race, were but evidences of his good luck to be in at the beginning of a new world of thought. He knew full well the pa.t he had played in bringing about the changes, but never forgot how small was his discovery compared to the infinity of detail and complexity into which some day order must be brought. His unshrinking modesty before the vastness of Nature led him to measure the praise of men by a scale that fitted both to the framework of our knowledge and to the universe of our ignorance. The application of this standard proved discomforting to flatterers, with whom he was not popular.

A personal analysis in his hands was in the fullest sense of the word a joint undertaking. He never moralised nor gave dogmatic instruction, but rather showed to the best of his ability what was going on at the moment in the mind and personality that was being studied. He implicitly trusted in good results following from a greater understanding of what is present in human nature. The human mind and human impulses were not of his creating and he found in them neither cause for self-congratulation nor self-reproach. He studied them closely, patiently and with singular lack of prejudice. Though intellectually so detached he was sensitive to every shade of emotional expression and feeling, and with this capacity for receptive understanding went patience which could afford to wait for the development of the best in those whom he held in affection. Intellectual power and constructive imagination in such degree contained within a nature essentially gentle and patient was a revelation of the heights to which the human spirit can attain.

Medical News

University of Oxford

Dr. A. M. Cooke has been appointed assistant to the regius professor of medicine and clinical subdean to the medical school of the university. Correspondence about clinical work at the Radcliffe Infirmary should be addressed to him there.

University of Glasgow

On Tuesday, Oct. 10, at 4.30 P.M., Prof. A. J. Ballantyne will deliver a lecture in the Tennent Memorial Building, 38, Church Street. He will speak on radiodiagnosis and radiotherapy.

On Sept. 27, the following degrees were conferred:

M.B., Ch.B.—A. W. Kay, David Struthers, and G. C. McKinlay (with honours); Andrew Muir, Andrew Allison, W. D. Buchanan, H. B. Young, C. M. Steven, William Blair, H. N. Nunro, K. R. Urquhart, A. H. Lauder, James Milne, Alexina M. Paterson, D. G. Wright, and Isabella M. Kerr (with commendation); G. F. Allan, G. R. Anderson, William Anderson, Bernard Andrew, Janey C. A. Arnott, John Ballantine, Hamish Barrowman, I. S. Bergius, Abraham Berkovitch, Jack Black, Catherine I. Blyth, Enid E. Brackenbury, Alexander Brown, Marrion A. M. Brown, O. T. Brown, William Brown, Janet M. Bruce, Margaret L. Bryson, A. M. Buchanan, J. R. F. Buchanan, Murdo Buchanan, Helen D. Burns, Margaret Callaghan, H. C. Campbell, J. L. Campbell, W. R. S. Campbell, Daniel Canning, Agnes E. D. Cathcart, Mirrlees R. Chassels, Sidney Childs, Samuel Citron, James Corbett, R. L. Coulter, Lewis Couper, J. M. Crawford, Muriel C. H. Cunningham, J. P. Currie, R. G. Dalziel, Barbara M. Davidson, Isabel Davidson, P. W. M. Davidson, A. S. Dawson, Archibald Dick, James Donaldson, J. L. Douglas, Henry Duff, H. G. Easton, G. M. Edington, R. S. Edington, Henry Fairlie, John Ferrier, Robert Finlay, J. W. Fleming, J. U. Forbes, J. A. Fraser, J. F. Mair Frew, Marion S. Gardner, Marjory A. Garrey, W. M. Gibson, J. G. Gillan, Janet B. Grant, Sidney Haase, H. L. Hart, Mary B. Howat, T. K. Howat, J. F. K. Hutton, Jessie D. Johnston, W. C. Johnston, L. G. Jubb, C. M. Kesson, A. W. Lees, George Leslie, Milicent H. S. Leslie, Brenda E. Linck, Robert Livingstone, W. P. D. Logan, John Loudon, Jean M. McArthur, J. J. McCall, A. I. McCallum, John McComb, E. L. F. McConnachie, J. S. McCrae, A. C. Macdonald, I. A. Macdonald, T. L. Macdonald, J. L. MacDougall, H. M. Macfarlane, I. W. Macfarlane, I. D. Macfie, P. G. McGrath, W. Q. McIntyre, A. M. McKelvie, W. B. McKenna, W. R. Mackie, C. M. McLean, Angus MacLellan, Iain McLennan, J. A. MacLeod, R. G. MacLeod, Helen M. McNeish, P. F. Maguire, S. S. Mair, K. C. Matheson, H. J. B. Miller, R. I. Mitchell, Robert Montgomery, G. C. Murray, Margaret K. Murray, Robert Murray, J. C. Mustardé, R. S. Patrick, Robert Paul, David Raeside, Edgar Rentoul, W. D. Richardson, Mary M. Richmond, W. D. Ritchie, R. B. G. Robertson, N. O. Rodger, John Rogers, A. M. Roy, David Salamon, John Scobbie, Dorothea H. Graham-Service, Francis Shaw, James Simpson, J. C. Simson, J. G. Smith, Jean M. Smith, Peter Sommerville, William Steele, Elizabeth M. Stephen, Mary Sullivan, J. D. Thomson, Janet Todd, J. W. Totten, J. A. Urquhart, Robert Waddell, F. M. Wainman, A. P. Walker, R. T. B. Watson, Jack Weir, W. P. Weir, Margaret E. Wells, Janet C. Willock, Margaret P. Wilson, R. M. Wink, G. M. Wood, Marion T. Wright, Eileen S. M. Wybar, and A. K. Young.

Emergency Notices

The committee of the Albany Club, of 3, Savile Row, W.1, would like to extend the privilege of honorary membership to doctors engaged on war work, particularly those at the London emergency war hospitals. Medical men or their wives wishing to take advantage of this offer should write to the secretary.

The Hungarian Postgraduate Committee announces that the international postgraduate course in balneology and rheumatology to have been held in Budapest this month is postponed.

King Edward VII's Hospital for Officers has been removed from 17, Grosvenor Crescent, S.W.1, to Luton Hoo, Luton, Beds (telephone, Luton 153).

The editors and publishers (Messrs. Edward Arnold and Co.) of the quarterly review, *Science Progress*, founded by Sir Ronald Ross in 1907, announce that after the October number publication will be suspended until conditions for research are more favourable.

London Homœopathic Hospital

The times of the lectures at this hospital have been altered. Dr. C. E. Wheeler's lectures in medicine will be given on Mondays and Thursdays at 2 P.M., beginning on Oct. 16. Sir John Weir will lecture on Fridays at 2 P.M. from Oct. 13. The tutorial classes of Dr. Douglas M. Borland will be given on Fridays at 3 P.M., beginning on Oct. 13, and the clinical tutorials of Dr. W. W. Rorke on Mondays and Fridays at 11 A.M. in the outpatient department. Dr. C. Granville Hey will give an introductory lecture on Oct. 12 at 2.30 P.M.

Foot-and-Mouth Disease Research Committee

Mr. Ian Galloway, D.Sc., M.R.C.V.S., has been appointed scientific superintendent of research at the committee's experimental research station at Pirbright. Dr. Galloway has been attached to the department of experimental pathology and bacteriology of the National Institute of Medical Research since 1926.

Royal Society of Tropical Medicine and Hygiene

Sir Rickard Christophers, F.R.S., will deliver his presidential address to this society on Thursday, Oct. 19, at 4.30 P.M. He will speak on malaria in war. The meeting will be held at the house of the society, 26, Portland Place, London, W.1.

Medical Society of London

The annual general meeting of this society will be held at 11, Chandos Street, W.1, at 5.15 P.M., on Monday, Oct. 9. At 5.30 P.M., Mr. Zachary Cope will deliver his presidential address. He has chosen for his subject the Profession of Surgery.

Royal Society of Medicine

Sir Walter Langdon-Brown will give his presidential address to the section of the history of medicine on Wednesday, Oct. 4, at 2.30 P.M. He will speak on W. H. Gaskell and the rise of the Cambridge school. On Tuesday, Oct. 10, at the same time Sir William Willcox, the new president of the section of therapeutics and pharmacology, will give his address on pharmacy and pharmacology.

London School of Hygiene and Tropical Medicine

The office and certain departments of the school are to remain for the present in Keppel Street. Courses normally lasting an academic year have had to be discontinued for the time being, but it is hoped in the near future to provide short courses of instruction in tropical medicine and hygiene. The school library will be open between 10 A.M. and 5 P.M. (Saturdays 10 A.M. and noon), and the librarian will be glad to answer inquiries by post or telephone.

Ligue internationale contre le rhumatisme

Owing to the war the league will no longer be able to carry out its activities. Its bureau at Keizersgracht 489, Amsterdam, will be closed.

WAR-TIME UNIVERSITY ARRANGEMENTS

UNIVERSITY OF BIRMINGHAM.—As far as possible, the Birmingham medical school intends to carry on both preclinical and clinical training. A first-aid course has been arranged during the first term's anatomy and physiology. When summer-time ends on Nov. 18, the courses will have to be restricted so that all students may reach their homes or lodgings before nightfall.

At the moment most clinical students are living in, or are billeted around, those hospitals which are to be used for casualty work. The commandants of each of these hospitals are coöperating in the scheme for the continued education of the students.

Apart from a few individuals who find it more convenient to complete their course near their own homes in Birmingham rather than in London, no large group of students from other schools are being trained at Birmingham.

UNIVERSITY OF LIVERPOOL.—The university has not accommodated students from any other school, but has admitted a few from outside schools for clinical work.

UNIVERSITY OF SHEFFIELD.—About 37 women students from University College, London, will attend classes in physiology and anatomy for the London 2nd M.B. exam. They will be accompanied by their own teachers and accommodation for nearly all will be found in university hostels.

Recently, urgent civilian cases have been admitted to the hospitals and clinical teaching has recommenced. All medical and surgical cases have been pooled for teaching purposes and physicians and surgeons are now able to teach on cases not necessarily under their own care. Six members of the staff have already left the university for full war service including the dean of the faculty of medicine.

Arrangements have been made for teams of clinical students to attend at various first-aid stations in the hospitals as soon as the "all clear" signal sounds after an effective air-raid on the city.

UNIVERSITY OF EDINBURGH.—Preclinical subjects will be taught as before in the university buildings and the clinical subjects in the hospitals, although modifications may be necessary.

Many of the junior members of the staff will not be available for teaching, owing to service commitments, but the senior staff will, to a large extent, be available. No visiting medical schools have been accommodated.

UNIVERSITY OF GLASGOW.—It is proposed to maintain the activities of the medical school as near normal as possible. The adoption of the six years' curriculum has been postponed. Eight of the less senior members of the teaching staff have gone to full-time military duties. There may be further depletion.

UNIVERSITY OF ST. ANDREWS.—It is intended to continue the medical curriculum as far as possible on normal lines. Preclinical instruction will be given both in St. Andrews and Dundee. Clinical teaching will be carried on in the Dundee Royal Infirmary, the municipal general hospital at Maryfield, and the municipal fever hospital at King's Cross. A number of the younger members of the staff who had territorial commitments have now gone.

The university is having as guests the first year of the Royal Free Hospital, London, who are having instruction at St. Andrews.

UNIVERSITY OF ABERDEEN.—The work of the university will be little affected by evacuation, for Aberdeen is a neutral area. Some non-medical students of military age will be called up, but the medical faculty will be enlarged by the addition of 130 second and third year students from the London School of Medicine for Women. Many of the teaching staff have gone on service but no difficulty is expected in carrying on the usual courses.

UNIVERSITY OF WALES.—At the Welsh National School of Medicine at Cardiff teaching is continuing, and the clinical side will have at least 400 beds to start the new session in October. Modifications include outpatient sessions in the mornings and the greater use of the institutions of the Cardiff City Corporation for clinical teaching. Some of the teaching staff are already on active service, and some retired senior members are returning, among them Emeritus-professor S. Lyle Cummins, who will probably help in the pathology department, and Mr. A. W. Sheen, former professor of surgery. Among the residents, women will to some extent take the place of men.

The school is receiving 60 students in their first clinical year from University College Hospital. A building is being secured as a satisfactory hostel for these students.

The preclinical departments of the school are in University College, Cardiff, and the college is receiving 100 anatomy and physiology students from University College, London. All students from outside will be accompanied by their own teachers.

GUY'S HOSPITAL DENTAL SCHOOL.—This school is to reopen on Nov. 1 at Sherwood Park Clinic, 1½ miles from Tunbridge Wells. Provision is being made for students in all stages of their course, including premedical students. There will be a subsidiary clinic in which conservative work, extractions and prosthetic work will be carried out actually in Tunbridge Wells. Accommodation will be provided in the school for some of the students at a cost of 50*s.* per week for board and lodging. Further particulars may be obtained from the sub-dean, Guy's Hospital Dental School, London Bridge, S.E.1.

There will be no meetings of the Harveian Society until further notice.

AT THE FIRST-AID POST

A MEMORANDUM for the guidance of medical officers and other personnel at first-aid posts [1] has been issued by the Ministry of Health. It expands the typewritten notes provided at the end of August [2] and retains the somewhat desultory form of the original, some paragraphs being evidently addressed to the layman and others to the doctor. The function of the first-aid post is defined as (1) to treat and send to their homes the slightly injured and those suffering from nervous shock; and (2) to arrest hæmorrhage, relieve pain, and so prepare those casualties who may be found to need institutional treatment that they can be transferred to the casualty (receiving) hospital with the least possible harm. The memorandum forms a supplement to the regular first-aid manuals, laying emphasis on facts and advice likely to be of special importance, including the immediate treatment of injuries of the head, the jaws, and the chest, and of emotional disorders. It concludes by reproducing Mr. P. H. Mitchiner's useful table showing the dosage of opium appropriate for the relief of pain when cleansing burns in children and adults. In general, however, it is not recommended that such cleansing should be attempted at the first-aid post. A picric-acid dressing, applied moist to a burn, will not interfere with the efficiency of tannic-acid treatment later.

. . . . IN ENGLAND—NOW.

ONE of my recent house-physicians came to see me yesterday, resplendent in new naval uniform. He finds himself with a good deal of time on his hands, and he asked me to give him a list of books "for serious reading, and appropriate to the times." Knowing something of his mind, I felt that he would like to brood on the answer to the question, "How do we stand now in relation to the broad sweep of history?" So here is my list:

"A History of Europe," by H. A. L. Fisher—to give a sense of proportion.

"The Making of Europe, 400 to 1000 A.D.," by Christopher Dawson—a history of another dark age, when the foundations of Europe were laid in fear and weakness and suffering.

"Reflections on the End of an Era," by Reinhold Niebuhr; and two small books by Nicholas Berdyaev, "The End of our Time," and "The Fate of Man in the Modern World"—all three with a steadying, big grasp of the signs of the times.

"Les Grands Cimetières sous la Lune," by Georges Bernanos—the reflexions of a wise, catholic mind on the Spanish tragedy and its wider background.

And finally, the Books of Isaiah and Jeremiah—this is very ancient history, but it is the nature of history to be constantly repeating itself. And a story of long ago has the advantage over our present experience in that it has been told to the end and its prophetic principles have been tested by the final issue. Written in times of intense historical crisis, they are the flower of an unconquerable faith, and of a vision of history seen *sub specie aeternitatis*.

* * *

It was my elderly cousin that introduced the subject of vermin. There was some excuse for her, for she had always lived in a country town, whereas the other two were Londoners born and bred. I was glad to have read *The Lancet* on nits and informed them that "statistics showed" that, so far from London children being infested by pediculi more than country ones, they were rather less so. I had to admit to selected cases. "Yes," said my cousin, "but can't you see how dreadful it must be for such a child to be introduced into a beautifully clean village home?" "Granted," said I, "but can't you also see how terrible it is for one of our clean Bermondsey children, where the rate is lowest, having to go into a dirty cottage?" The problem is a difficult one, for even with the Bermondsey figure of 0·8 per cent., there are among 600,000 children some 5000 being added to those already affected in the countryside and provincial towns. In dealing with the problem it is necessary to gain the goodwill of the patients, and no suggestion of shame or naughtiness must be raised within their breasts nor should any strong words be used. It was thus the soldier met the problem when he called himself "chatty." "Lousy" is a word that is loathsome to me, as it is, I believe, to most of my generation. Some years ago one of the most brilliant of my juniors described some minor point of maladministration as being "absolutely lousy." I took him aside and said to him, "I will admit that things are not as they should be; but I do not think you need as strong a word as that. 'P—y' perhaps, or even 's—y,' but hardly 'lousy.'" He stared at me open-eyed, and I added, "If I used either of those first two words in a mixed company in the presence of the nurses, you would think me a dirty old man." "Yes, sir," he admitted, "I should." "Well, then," I said, "remember that to those of my age, who have been there, your word is even worse." Even the official or parliamentary word "verminous" should be avoided. Shortly after my return from the war I found that a child at my school clinic had pediculi and I said to the mother, "I am afraid your little one has some of them things." "Oh, doctor," she said, "I know and I've tried hard to get rid of them, combing 'er 'ead and all." "Well," said I, "we'll try to help you if you will take her to those nice medical baths." For the necessary arrangements I passed her on to the administrative official. This was an austere woman already in middle-age, and I heard her say to the poor mother, "Woman, your child is verminous. I am sending her to the cleansing-station." I leaped to my feet, crossed the room, and told her she was never to speak to one of my patients so. She told me she was only using the official language. I replied that I would not have anyone in my clinic who spoke like that. She replied that I should have to have her. A tactful sister came and settled us down—temporarily, for the point was left unargued. However, the lady settled it that evening by going down with appendicitis. When she recovered she returned to the service and, I believe, is still in it, though she has never again worked in any part of the county near where I am employed. The point is that in dealing with "them things" you must have the patient, and her mother, with you and not against you.

* * *

Newcastle is an evacuated town. Two thousand hospital beds stand empty. But some of us have insisted on keeping our ward work going. We made a brave gesture to keep an appeal going too. It had reached £110,000. Now the city council are discouraging it, but we shall go on as best we can. We shall hold the medical school and teaching together, but these inhibitory influences from Whitehall weaken peripheral movement.

Why is it that if one asks a simple question about sick people of the Ministry of Health, after a few days one gets a reply beginning—"The Minister has considered this matter and requests me to point out . . ." Surely this formula deceives no-one, it is a mealy-mouthed shifting of responsibility, and a waste of time and typescript. Far away at the periphery of the ministerial spider's-web, we feel more caught up than you at the centre. As the hierarchy spreads down from its Whitehall apex, direct responsibility gets less and less. Each query has to percolate through to the pundits, and, on its return, clothe itself in circumlocution so that no-one may misunderstand or even understand its meaning. Is it enough to say

1. Emergency Medical Services: Memo. No. 4. H.M. Stationery Office. 1939. Pp. 14. 3*d*.
2. See *Lancet*, Sept. 2, 1939, p. 578.

that everyone is doing his best? Unfortunately some people's best may not be good enough. In this new and rapidly built administrative machine we have not had time to sift out those "born" administrators, who in the past have found more financial profit and mental satisfaction in the practice of medicine than in government service. In an emergency the niceties of civil service procedure must be forgotten. Inefficiency as well as senility must be made a ground for retirement. And the best men must get the best jobs, no matter how many staid and sober officials have to be passed over.

Now for a pre-war flash-back. We had a lovely holiday at Rosenlaui up from Meiringen. At last I have found my ideal Swiss holiday place. We came away saying here we shall return year after year. We took in Zürich on the way back, to look at the exhibition. I thought it would be nothing but a good sideshow for the children, but it took my breath away. I do not know what quintessence means, but if it means what I think it means, the Zürich Exhibition was the quintessence of human ingenuity and intelligence. Here was a civilised achievement beyond anything I had imagined.

We came home by Germany and stayed a few days in Freiburg. I wanted the children to see that not all Germans carry bombs in their hands, so if we have to face a few years of public falsehoods there are at least four English children who will cherish a memory of a few happy days spent with a lovable southern German family. Coming home I got into trouble near Frankfurt. No petrol to be had, and there I was a hundred miles from the border at Aachen. Alles verkauft or leer on every petrol pump—and no civilian cars to be seen. Germany mobilised and thousands of military waggons on the roads. Here and there we got petrol by kindness, and when at last I felt secure with sufficient in the tank to carry me to the Belgian border we loitered for a fine August day in Bonn. We bought plums in the market-place at a penny a pound and saw Beethoven's monuments. And so to Antwerp quay, where all was chaos.

But you probably want to hear about evacuation, A.R.P. and first-aid posts in a "vulnerable" town. That I believe is the official designation for Newcastle—although Wallsend with its 60 or 70 thousand inhabitants, next to Newcastle and nearer the mouth of the Tyne, is neither "vulnerable" nor "evacuated." The Ministry of Health is encouraging us to spend in Newcastle in salaries alone, on our first-aid posts only, £300,000 a year. This is demoralising. England is finished if its citizens cannot undertake the first-aid care of their fellows without these bribes. But I may be wrong. I often am.

Vacancies

Bedfordshire County Council.—Asst. M.O.H. Maternity and Child Welfare, £500.
Brighton, Sussex Maternity and Women's Hosp.—Res. H.S., £130.
Burnley County Borough.—Asst. M.O., £850.
Cambridge, Addenbrooke's Hosp.—H.P., at rate of £130.
Cardiff, King Edward VII Welsh National Memorial Assn.—Res. M.O. for Adelina Patti Hospital, £350.
East Sussex County Council.—Deputy M.O.H. and deputy school M.O., £850.
Epsom College.—Council Exhibitioners, each £75.
Greenwich Metropolitan Borough.—Tuberculosis officer for Council's Dispensary and deputy M.O.H., £750.
Harrow Urban District Council.—Asst. M.O.H., £600.
Hertfordshire County Council.—Assist. tuberculosis officer, £500.
Huddersfield Royal Infirmary.—H.P., at rate of £150.
Manchester City.—Asst. tuber. officer, £650.
Nottingham General Hospital.—H.S. for Orthopædic and Fracture Dept., at rate of £150.
Oldham County Borough.—Asst. school M.O. and asst. M.O.H., £550.
Oxford, Exeter College.—Staines Medical Research Fellow, £400.
Plymouth City General Hosp.—Asst. M.O., £300.
Rochdale County Borough.—Res. M.O., £350.
Sheffield Children's Hospital.—H.S., at rate of £100.
South Shields Maternity Hospital.—Asst. Res. M.O., £350.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Hon. radiologist.
Walsall Manor Hospital.—Jun. Asst. M.O., £150.
Wolverhampton Royal Hospital.—Res. anæsthetist, at rate of £200.
Medical Referee under the Workmen's Compensation Act, 1925, for the county-court districts of Bradford, Keighley, Otley and Skipton (circuit No. 12). Applications to the private secretary, Home Office, Whitehall, London, S.W.1, before Oct. 23.
The Chief Inspector of Factories announces vacancies for examining surgeons at Shipston-on-Stone, Warwick, and Wooler, Northumberland.

Appointments

McLAREN, R. G. A., M.D. Aberd., B.Hy., D.P.M., deputy medical superintendent at the County Mental Hospital, Whittingham, nr. Preston.
MARIENFELD, O. W., M.D. Rostock, L.R.C.P.E., D.P.H., assistant medical officer (tuberculosis) for South Shields.
Examining Surgeon under the Factories Act, 1937: Dr. DAVID FERGUSON (St. Blazey district, Cornwall).

Births, Marriages and Deaths

BIRTHS

BURNHAM-SLIPPER.—On Sept. 27, at Southsea, the wife of Dr. C. N. Burnham-Slipper—a son.
CHEVERTON.—On August 13, at Belize, the wife of Dr. R. L. Cheverton, senior medical officer, British Honduras—a daughter.
CURRANT.—On Sept. 29, at Haslemere, the wife of Dr. E. J. Currant—a daughter.
PIRRIE.—On Sept. 29, at King's College Hospital, the wife of Dr. Denis Pirrie—a son.
ROQUES.—On Sept. 29, at Wendover, the wife of Squadron Leader F. W. Roques, F.R.C.S.—a son.
SNELL.—On Sept. 26, at Bishopstone, Bucks, the wife of Surgeon Lieutenant T. Snell, R.N.V.R.—a daughter.

MARRIAGES

BALCH—GIBSON.—On Sept. 30, at Wallington, Hubert William Balch, M.B., to Joyce Gibson.
GRAHAM—JAMES.—On Sept. 8, at Nathia Gali, Captain George Kenneth Graham, M.B., I.M.S., to Nancy James, of Littlehampton.
RIDYARD—WALKER.—On Sept. 1, at Sharrow, John Middleton Ridyard, M.B., of Chesterfield, to Frieda Gwenllian Walker, of Sheffield.
TALBOT—BETTS.—On Sept. 28, at St. John's Wood, Lieut.-Colonel Graeme Gibson Talbot, F.R.C.S., R.A.M.C., to Joan Betts.
TAYLOR—CLIFFORD.—On Oct. 3, at Jordans, Beaconsfield, Stephen James Lake Taylor, M.D., M.R.C.P., to May Doris Charity Clifford, M.B.
ZUCKERMAN—ISAACS.—On Oct. 2, in London, Solly Zuckerman, M.R.C.S., to Lady Joan Rufus Isaacs.

DEATHS

ALLISON.—On Oct. 1, at Kettering, John Allison, M.D. Edin., F.R.C.S.E., D.P.H., late medical officer of health, Kettering, aged 76.
COMRIE.—On Oct. 2, at Edinburgh, John Dixon Comrie, M.D. Edin., F.R.C.P.E., aged 68.
COOPER.—On Oct. 1, at Surbiton, George Frederick Cooper, M.B. Lond., aged 78.
COTTON.—On Sept. 28, at Canterbury, Charles Cotton, O.B.E., F.R.C.P.E., Knight of Grace of the Order of St. John of Jerusalem, aged 83.
DAVENPORT.—On Sept. 11, at Melbourne, Arthur Frederick Davenport, M.B. Lond.
FAWCETT—On Oct. 2, at King's College Hospital, Mary Noble Fawcett, M.R.C.S., of Tonbridge, aged 32.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 16, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1139; diphtheria, 823; enteric fever, 77; pneumonia (primary or influenzal), 266; puerperal pyrexia, 153; cerebrospinal fever, 15; poliomyelitis, 29; polio-encephalitis, 2; encephalitis lethargica, 3; dysentery, 34; ophthalmia neonatorum, 64. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 3 (0) from enteric fever, 2 (0) from measles, 3 (0) from scarlet fever, 6 (2) from whooping-cough, 28 (1) from diphtheria, 48 (4) from diarrhœa and enteritis under two years, and 10 (0) from influenza. The figures in parentheses are those for London itself.

Wakefield reported 2 deaths from typhoid, Stockport 1. Birmingham had 2 deaths from whooping-cough. Fatal cases of diphtheria were scattered over 19 great towns, Liverpool and Birmingham each reporting 3, Stockport, Stockton-on-Tees, Sunderland, Leicester and Plymouth each 2. Liverpool had 8 deaths from diarrhœa, Birmingham 5.